July 2002

Assessment of Medicare Prescription Drug Prices

Final Report

Prepared for

Peri Iz
Centers for Medicare & Medicaid Services
Office of Research, Development and Information
7500 Security Boulevard
Mail Stop C3-19-26
Baltimore, MD 21244-1850

Prepared by

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1 Purpose and Introduction

The purpose of this project is to collect and analyze data on how much non-Medicare purchasers pay for prescription drugs that are currently covered by Medicare Part B. Medicare Part B currently covers a relatively small number of prescription drugs, but allowed charges for these drugs totaled over $5 billion in 2000. A number of previous studies suggest that Medicare pays substantially more for these drugs than other payers pay. To build on this evidence, we attempted to collect price data from drug wholesalers, group purchasing organizations (GPOs), mail order drug firms, pharmacy benefits managers (PBMs), and Medicare managed care organizations. In addition, we acquired invoice price data for multiple points on the drug distribution chain, as well as information on prices paid by other public payers, such as Medicaid and the Veteran's Administration (VA). We compared these prices to Medicare reimbursement rates. We also performed simulations to determine how much Medicare would pay for Part B drugs if it were able to obtain the same prices obtained by other payers.

The report is organized in the following way. In Section 2, we present background information on drug distribution channels, Medicare reimbursement policy for Part B drugs, and previous studies of other payer prices. In Section 3, we describe our methodology for collecting and analyzing price data from multiple sources. In Section 4, we present results of the analysis. We simulate Medicare allowed charges under the assumption that Medicare can obtain the same prices paid by other payers. In Section 5, we summarize the results and discuss their implications for policy.

2 Background

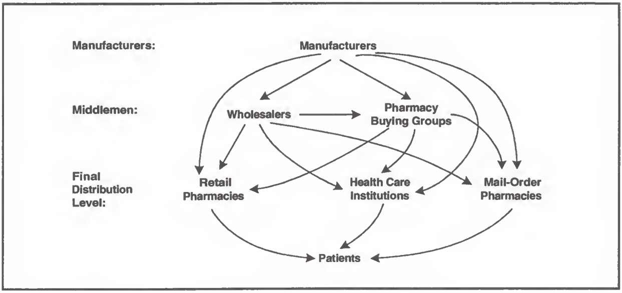
The purpose of this analysis was to collect information on prices in the prescription drug market and to use these prices to determine how much savings or additional costs would have occurred if Medicare had used these prices to set reimbursement rates. In this section, we provide background information to provide a framework for our analysis. In Section 2.1, we describe the overall market for prescription drugs and how we selected different targets to obtain price information. In Section 2.2, we describe how Medicare reimbursement is formulated. Finally, in Section 2.3, we review related research and discuss recent legal developments that may have had an impact on our data collection.

2.1 PRESCRIPTION DRUG MARKET

2.1.1 Drug Distribution Channels

Drug prices vary by their position along drug distribution channels. Figure 2-1 provides a simplified view of these distribution channels for prescription drugs. For simplicity, we have divided the distribution chain into three levels: manufacturers, who produce the drugs; "middlemen," who provide an intermediate stage between manufacturers and the final distribution level; and the final distribution level that distributes drugs directly to patients. In the most traditional chain, manufacturers sell drugs to wholesalers, who in turn sell the drugs to retail pharmacies or health care institutions (including hospitals and physician practices), who then distribute the drugs to patients. Recently, GPOs have formed at the middleman level to help retail pharmacies and health care

Figure 2-1. Pharmaceutical Distribution Channels

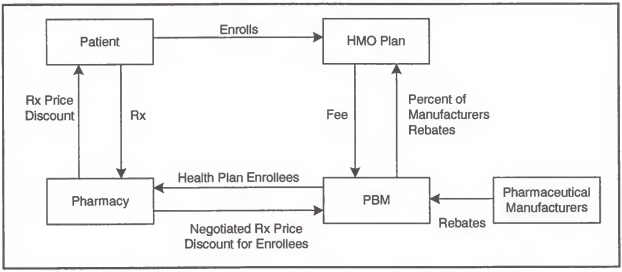


institutions negotiate lower prices from manufacturers and wholesalers. In another recent development, mail-order (and Internet) pharmacies are now available at the final distribution level to provide drugs directly to patients. In some cases, the manufacturer may skip the middleman and sell directly to retail pharmacies, health care institutions, or mail-order pharmacies at the final distribution level. Such a strategy is most likely to be efficient when the manufacturer sells to an entity that makes large purchases.

2.1.2 Implications of Drug Distribution Channels

Figure 2-1 has several important implications. First, as prescription drugs move vertically along distribution pathways from manufacturers to the patient, each level adds a certain amount of value to the product. Each subsequent level includes additional services associated with transportation, storage, and distribution and thus represents an increasingly costly product. Another effect of moving through the distribution channels is that there may be less price competition at lower levels, since these drugs have already been partially distributed and no longer represent identical goods. This implies that it is important to capture prices along each of these stages to measure the value added to the drugs as a result of each level of distribution, as well as any price changes due to different profit margins at each level. Second, prescription drugs can move laterally or move through parallel distribution channels en route to the patient. Many prescription drugs covered by Medicare are administered by health care institutions, while others, especially nebulizer drugs administered through durable medical equipment (DME), are usually distributed to patients through retail or mail-order pharmacies. Costs and prices may differ significantly among the different entities at the final distribution level. Since different costs and values are associated with different delivery routes, it is important to identify price variation among the entities at the same distribution level. Third, due to the development of nontraditional distribution channels, it is important to collect information on prices for GPOs and mail-order (and Internet) pharmacies. These are quickly developing into important conduits for prescription drugs along the distribution pathways and may lead to changes in price and efficiency in the market. Figure 2-2 suggests that it is necessary to collect price information from a variety of locations in the prescription drug market to identify actual costs and prices resulting from different distribution routes.

Figure 2-2. Insurance, Pharmacy Benefit Managers, and Payments


Patient
Enrolls
HMO Plan
Rx Price Discount
Rx
Fee
Percent of Manufacturers Rebates
Health Plan Enrollees
Pharmacy
PBM
Pharmaceutical Manufacturers
Rebates
Negotiated Rx Price Discount for Enrollees

Source: Reproduced from GAO, 1995.

2.1.3 Discounts and Rebates

Manufacturers and wholesalers commonly offer discounts and rebates to drug purchasers and third-party insurers that pay for drugs. Discounts and rebates may be based on volume or negotiating power. The prevalence of discounts and rebates has important implications for our study: list prices will not necessarily reflect the true transaction price net of discounts and rebates. Ideally, we would like to have data on discounts and rebates because net prices (i.e., after discounts and rebates) are the most relevant for comparisons to Medicare. Unfortunately, discount and rebate information is typically confidential, and we were unable to obtain this information from any of the sources. We therefore treat the price as an upper bound on the net price for the drug. Where the list price is lower than the price Medicare pays, we have confidence that the net price is even lower.

2.1.4 Payments by Third-Party Insurers

Third-party insurers who reimburse drug costs for individuals enrolled in their plans are another potential source of information on the net prices paid for drugs. While some patients pay out-of-pocket for the drugs they receive, payments for many other patients are made by third-party insurers or PBMs. In 1998, about 73 percent of Medicare beneficiaries had some form of supplemental insurance that provided drug coverage (Poisal and Murray, 2001). Many insurance plans have contracted with PBMs to administer their prescription drug benefits. Figure 2-2 shows the role of PBMs in reimbursing pharmacies and negotiating discounts from pharmacies and rebates from manufacturers. PBMs' ability to negotiate discounts from pharmacies and rebates from manufacturers stems from their ability to direct enrolled patients to participating pharmacies and to particular manufacturers' drugs. This suggests that PBMs are an important source of information on the net prices paid for drugs. However, there is an important caveat for this study: most PBMs developed by administering benefits for prescription drugs distributed through retail pharmacies. Many of the drugs covered by Medicare are distributed primarily through health care institutions. PBMs have less experience negotiating discounts and reimbursing for these drugs (Hoerger, Broglio, and Waters, 1999). Indeed, insurers may directly reimburse health care institutions for these drugs, without using PBMs.

2.2 MEDICARE COVERAGE OF PRESCRIPTION DRUGS UNDER PART B

Medicare Part B generally does not cover outpatient prescription drugs, but there are several important exceptions. Medicare Part B covers certain immunosuppressive drugs for transplant patients, drugs used in association with kidney dialysis, selected oral and injection anticancer drugs, and some nebulizer drugs administered by DME. Medicare Part B also pays for selected vaccines. These drugs include single and multi-source drugs and can be administered to patients by health care providers or purchased directly by patients through pharmacies. Part B allowed charges for prescription drugs were about $5 billion in 2000, with $4 billion paid by CMS and the remaining $1 billion paid as co-payments by Part B beneficiaries.

2.2.1 Medicare Reimbursement Rates

Medicare uses the Healthcare Common Procedure Coding System (HCPCS) to classify prescription drugs. HCPCS codes specify a dose and an active ingredient. Most other payers base reimbursement on National Drug Codes (NDCs), which specify the drug manufacturer or labeler, product, administration route, and package size. Generally, multiple NDCs correspond to a single HCPCS code. Individual Medicare carriers are responsible for reconciling the two systems by selecting which NDCs to include within each HCPCS code.

Prior to the Balanced Budget Act of 1997 (BBA 97), Medicare allowed charges for a drug covered by Part B equaled the lower of Estimated Acquisition Cost (EAC) or the Average Wholesale Price (AWP) for the drug. The EAC was determined on the basis of surveys of the invoice prices paid for the drug, while the AWP is published in the *Red Book* or other drug pricing publications. In practice, most Medicare carriers used the AWP to set allowed charges (DHHS/OIG, 1997). Current Medicare Part B reimbursement for drugs as mandated by the BBA 97, effective January 1, 1998, defined reimbursement as 95 percent of the lesser of (1) median AWP for all generic drugs within an HCPCS or (2) the AWP of the lowest price brand name drug included in that HCPCS. Medicare pays 80 percent of the reimbursement amount, and Medicare beneficiaries are responsible for a co-payment of the remaining 20 percent. Despite its name, AWP is not calculated from actual prices and thus does not necessarily reflect market prices. AWPs are based primarily on the suggested wholesale price by drug manufacturers, although drug manufacturers have recently begun to stress that they do not directly set the AWPs. CMS has been granted "inherent reasonableness" authority to deviate from Congressionally-mandated reimbursement policy, but Congress has subsequently restricted CMS's ability to use this authority pending analysis by the GAO.

2.2.2 Potential Problems of This Approach

Medicare Part B reimbursement policy is based on several features that may lead to artificially high reimbursement rates. These features include the use of HCPCS codes and AWPs in determining reimbursement rates.

2.2.3 HCPCS

As noted above, Medicare processes prescription drugs using HCPCS codes. The Health Insurance Portability Act of 1996, and pending proposed changes (DHHS, 2002), stipulate that NDCs be the standard code used on pharmacy transactions as of October 16, 2003, but Medicare reimbursement data listed by NDC codes are currently unavailable. This is an obstacle to accurately analyzing and comparing Medicare reimbursement to prices encountered elsewhere in the prescription drug market, because almost all other entities use NDC codes. Individual Medicare carriers are responsible for determining which NDC codes are included in each HCPCS category. HCPCS AWPs calculated by each carrier can vary due to differences in NDC inclusion selections, quantity conversions, and frequency of updates, and thus different carriers may reimburse for drugs at slightly different amounts. The GAO report *Payments for Covered Outpatient Drugs Exceed Providers' Cost* (GAO, 2001a) and the DHHS/OIG report *Medicare Reimbursement of Prescription Drugs* (DHHS/OIG, 2001a) analyzed variations among individual carrier AWPs .

The use of HCPCS codes for claims processing also limits CMS's potential ability to obtain drug manufacturer rebates since, unlike NDCs, they do not specify the labeler or manufacturer. Manufacturer rebates are commonly used by other drug payers to control drug costs. CMS currently does not have the authority to seek manufacturer rebates for Medicare Part B. If CMS had the authority, it would need to be able to identify the manufacturer that provided the drug included in each claim in order to calculate the drug rebate.

2.2.4 Average Wholesale Price

Basing reimbursement on a fraction of the AWP is problematic because the AWP is not a market-based measure of price or cost. The AWP is not defined in statute or by its reporting companies; in practice, it can best be described as a "list price" that is largely determined by manufacturers. The name AWP is very misleading; to avoid confusion, we will refer to this nonmarket price as AWP and signal any data that are actually derived from real prices as being a "*real*" or "*actual*" "average wholesale price." Mounting evidence (discussed below) indicates that the health care providers who ultimately bill Medicare for Part B drugs are able to acquire the drugs at true market prices well below 95 percent of AWP. Thus, basing reimbursement on the AWP may lead to excessive reimbursement, unless the cost of storing and administering the drug is equal to the "spread" between the acquisition price and 95 percent of the AWP.

In addition, the spread may actually increase demand for a drug in a way that perversely increases the AWP and, therefore, Medicare reimbursement rates. Presumably, health care providers choose the drug they provide to a patient primarily based on the drug's efficacy for the patient. However, in cases where two drugs have similar efficacy, the provider may also consider the relative profitability of supplying each drug. In such a case, a drug manufacturer may increase sales by increasing a drug's AWP, thereby increasing the spread that the provider will receive. This is a perverse effect, because price increases are usually expected to reduce demand. Manipulation of the spread to increase sales has been the subject of judicial (see Section 2.3.3) and Congressional investigations (Subcommittee of Health and the Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, House of Representatives, September 21, 2001).

Manufacturers have control over their prices and the AWPs they report for their NDC-classified drugs to publishing companies. Medicare carriers classify NDC codes into HCPCS categories and calculate the HCPCS AWP from the NDC AWPs reported by manufacturers. For single source HCPCS where there is only one manufacturer, this effectively means such a manufacturer has absolute control over the HCPCS AWP eventually calculated by the carriers. Manufacturers of multi-source drug categories have only limited control over the AWP for HCPCS that includes their products. Any amount they report will be mediated by the amounts reported by other manufacturers.

2.3 PREVIOUS REPORTS

The General Accounting Office (GAO) and the Office of Evaluations and Inspections (OEI) in the Department of Health and Human Services's Office of Inspector General (OIG) have presented reports on the performance of the current reimbursement system and relevant areas, such as Medicaid reimbursement, which is also based on AWP.

2.3.1 DHHS, Office of Evaluations and Inspections, Office of Inspector General

2.3.1.1 Research Prior to Effects from BBA 97

The OIG released several reports dealing with Medicare payments for prescription drugs before and around the time BBA 97 reimbursement changes were adopted on January 1, 1998. These reports suggested that Medicare paid more than many other payers and that there could have been substantial savings if another payment methodology had been adopted. An OIG report (DHHS/OIG, 1998b) compared Medicare's allowances for prescription drugs with acquisition prices available to the Veteran's Administration (VA). The OIG collected Medicare payments and utilization and VA acquisition costs for 34 drugs. According to this study, if Medicare payments were equal to VA acquisition costs, Medicare would have saved approximately $1.03 billion in 1998, almost half of Medicare's reimbursements in 1997.

The OIG also compared Medicare and Medicaid payments (DHHS/OIG, 1996d). They collected drug reimbursement information from both Medicare and Medicaid and determined that, for the 17 prescription drugs they examined, Medicare could have saved $122 million, or 14.6 percent of its allowed charges in 1994, if Medicaid rebated amounts were applied to Medicare utilization. Alternatively, $144 million could have been saved if Medicare implemented a discounted AWP reimbursement formula similar to the state Medicaid agencies.

A third report (DHHS/OIG, 1997) compared Medicare payments to wholesale prices available from drug wholesalers and GPOs. The

OIG was able to obtain pricing lists/catalogs from wholesale drug companies and GPOs that provided pharmaceuticals mainly to physician practices and specialized or closed pharmacies. If these acquisition costs had been used as the basis for reimbursement instead of the published AWPs, the OIG estimated that Medicare could have saved $447 million, or 29 percent of total charges, for 22 drugs in 1996.

The OIG also released a series of reports on Medicare payments for nebulizer drugs in general and albuterol sulfate in particular (DHHS/OIG, 1996a, 1996b, 1996c, 1998a). These studies compared Medicare payments with Medicaid, VA, mail-order pharmacies, retail pharmacies, pharmaceutical purchasing groups, and wholesale drug company prices and payments. These reports found that Medicare paid substantially more for nebulizer drugs than other purchasers. The latest of these reports analyzed prices collected in 1997 and 1998. Medicare reimbursement identified for this drug was $0.49 per ml. OIG compared this amount to the other prices they collected. Medicaid Drug Rebate Initiative (MDRI) data yielded a Medicaid reimbursement of $0.34 per ml, and OIG reported an average rebate of $0.01 per ml. Prices available to the VA ranged from $0.06 to $0.25, with seven of nine types below $0.12 per ml. OIG also collected prices from five GPOs, three wholesalers, and five mail-order pharmacies. GPO prices ranged from $0.10 to $0.12, with one NDC price of $0.19. Wholesalers reported prices of $0.09 to $0.14. Four of the mail-order pharmacies reported prices of $0.27 to $0.38, and the fifth reported prices of $0.31 to $0.39, depending on volume. These reports clearly demonstrated that Medicare paid more for albuterol sulfate and other nebulizer drugs than other payers.

2.3.1.2 Recent Research

In the years following the adoption of the reimbursement changes in BBA 97, the OIG released more research demonstrating that the reduction from AWP to 95 percent of AWP had not brought Medicare Part B reimbursement rates in line with other prices found in the pharmaceutical market. An OIG report released in January 2001 (DHHS/OIG, 2001a) compared Medicare's reimbursement to prices available to the Department of Veterans Affairs and the physician/supplier community as well as to Medicaid rebates for the 24 drugs with the highest total Medicare payments in 1999. It found that Medicare reimbursement rates were significantly higher than the amounts borne by the other payers. The study found that the amounts the VA paid for the included drugs ranged from 15 percent to 91 percent below Medicare reimbursement rates. Had Medicare reimbursement been set at VA prices, Medicare and its beneficiaries would have reduced total costs from $3.2 billion to $1.5 billion for the 24 included drugs. Employing "actual wholesale prices" calculated by OIG by reviewing catalog prices to set reimbursement for these drugs would have saved $761 million. OIG estimated $425 million in savings if Medicaid prices were used. The OIG also analyzed reimbursement inconsistencies among carriers and noted that these differences were the result of "(1) decisions regarding when to update reimbursement amounts, (2) the choice of pricing compendia used to determine AWPs, and (3) the selection of particular NDCs to meet the HCPCS code definition."

In March 2002 (DHHS/OIG, 2001b), OIG released a report concentrating on ipratropium bromide. This report provided a VA price for this drug 21 percent lower than the price in their earlier report.

OIG has recently released several studies on Medicaid reimbursement. Medicaid is the largest source of public coverage for prescription drugs. Even though Medicaid's rates have been consistently shown to be lower than Medicare's, OIG has shown that Medicaid's rates for prescription drugs may be higher than other pricing mechanisms available to the federal government. An OIG report (DHHS/OIG, 2001c) demonstrated that for antiretrovirals (HIV/AIDS drugs), Medicaid payments were 33 percent above the federal ceiling price and 10 percent higher than the Federal Supply Schedule. Another OIG report (DHHS/OIG, 2001d) studied the relationship between Medicaid discounts and the difference between Medicaid rates and pharmacy invoice prices. The report estimated an actual acquisition cost of brand name or single source prescription drugs by collecting a national sample of pharmacy invoice prices. The average actual acquisition cost was 21.84 percent below AWP, while the average Medicaid discount was only 10.31 percent below AWP.

OIG reports consistently showed overly high reimbursement rates based on any measure of AWP. Amid mounting evidence that manufacturers were listing unrealistically high AWPs, the U.S. Department of Justice and the National Association of Medicaid Fraud Control Units (NAMFCU) conducted an investigation into prescription drug pricing and generated "actual wholesale prices" for certain drugs intended for state Medicaid programs. The investigation obtained pricing data for 400 NDC codes representing 51 drugs and ordered First DataBank to use these data to calculate the AWPs for the affected drugs. NAMFCU actively encouraged state Medicaid programs to use these revised AWPs for setting reimbursement rates. These new rates took effect on May 1, 2000. An OIG report published in September 2001 (DHHS/OIG, 2001e) analyzed the results of this investigation. Of the 48 states and the District of Columbia that were polled, OIG found that 30 had incorporated the revised AWP "in some manner." All of the states used the rates for certain pharmacy drugs, but only nine continued to use the rates as reimbursement for physician-administered drugs. The poll revealed that certain state Medicaid agencies were concerned that the use of the revised AWPs might restrict access to certain drugs or services. The OIG concluded that the revised AWPs resulting from the investigation would result in short-term savings but that any program based on revised AWPs would not be a sufficient long-term solution.

2.3.2 General Accounting Office

The GAO presented the findings of the report *Payments for Covered Outpatient Drugs Exceed Providers' Cost* to Congress on September 21, 2001. GAO reviewed Medicare reimbursement policies and collected and analyzed prescription drug prices. The report demonstrated that market prices were well below AWP for the drugs studied.

GAO began their analysis by using 1999 Part B Extract and Summary System (BESS) data to determine the 20 HCPCS codes with the highest total Medicare reimbursement expenditure and the 20 drugs with the highest reimbursement volume. When combined, these lists constituted 35 distinct drugs. Four drugs were subsequently eliminated because GAO was either unable to define which NDC codes were included or was unable to obtain relevant pricing data. GAO asked certain Medicare Part B carriers and each regional DME to provide a list of NDC codes they used to calculate their HCPCS reimbursement rate. Since individual carriers conduct this process differently, GAO used all of the NDC codes included by the participating carriers. Information on drug acquisition and administration costs was obtained by soliciting and interviewing physician professional associations. Price data for individual NDC codes were obtained from specialty pharmacies, DME pharmacy suppliers, a national oncology clinic chain, and physicians, including physician practices identified as low billing entities. GAO attempted but was unable to solicit data from wholesalers and GPOs. GAO did obtain price lists for certain wholesalers and GPOs from "a government agency and from providers." The prices obtained in the investigation were compared to AWPs obtained from the 2000 and 2001 *Red Book.*

The GAO analysis revealed that AWPs were much higher than other prices available for the included prescription drugs. Physician administered drug prices were generally 13 percent to 34 percent below AWP. Prices for two of the included drugs were 65 percent and 86 percent below AWP. These discounts were also available to low-billing practices. Pharmacy supplier-billed drugs identified in GAO's sample exhibited prices that ranged from 69 percent to 85 percent lower than AWP. GAO was able to obtain wholesale or GPO prices for two of four oral immunosuppressive drugs included in the sample, which were 14 percent and 77 percent below AWP. Internet pharmacy retail prices for the other two drugs were 13 percent and 8 percent below AWP.

The GAO report discussed issues and implications of drug reimbursement, including administration costs and beneficiary access. Physicians, especially oncologists, contend that the profits generated from over-reimbursement for drugs are necessary to cover insufficient reimbursement of drug-administration costs. A GAO report released in October 2001, *Medicare Physician Fee Schedule, Practice Expense Payments to Oncologists Indicate Need for Overall Refinements,* established that physician reimbursement, based on the physician fee schedule, is 8 percent higher than it would be under the previous charge-based system. GAO identified methodological improvements that could be made to the physician fee schedule but found the amounts that oncologists were reimbursed for drug administration were reasonable. Thus, the study concluded that with accompanying minor changes to the physician fee schedule, drug-administration costs should not be a concern when determining reimbursement of medication. The GAO also noted that there was variability in the drug prices observed, with not all purchasers able to acquire drugs at the lowest price. A new reimbursement system based on the lowest prices in the market might compromise beneficiary access as certain purchasers could not obtain drugs at such a price.

2.3.3 Related Developments

The U.S. Department of Justice, DHHS/OIG, and state Medicaid fraud control units have been investigating Medicare and Medicaid drug reimbursement for several years (Holder and Posner, 2001), and these investigations have generated several actions. In addition to the adoption of the use of *actual* AWPs for reimbursement of certain Medicaid drugs on May 1, 2000 (as described by an OIG report, *Medicaid's Use of Revised Average Wholesale Prices*, and a press release by First DataBank on June 15, 2000), two criminal investigations have resulted in settlements. In September 2000, Bayer Corporation agreed to pay $14 million to the United States and 47 states to settle allegations of violating the False Claims Act by inflating AWP to increase reimbursement for its drugs (U.S. DOJ press release, 2000). On October 3, 2001, TAP Pharmaceutical Products, Inc. (*New York Times*, 2001) reached an agreement with the U.S. Attorney's Office for the District of Massachusetts (*United States v. TAP*, D. Mass., 01CR10354, plea entered 10/16/01) to settle charges of conspiring to violate the Prescription Drug Marketing Act by inflating AWPs and engaging in illegal physician inducements, such as arranging reimbursement for free samples. The settlement requires TAP to pay $875 million, including $290 million as a criminal fine (Elfin, 2002). Both companies also agreed to enter into corporate integrity agreements (CIA) with DHHS/OIG. The terms of the CIAs state that TAP and Bayer must report the average sale price (ASP) of their drugs, defined as "the average of all final sales prices charged by TAP '(or Bayer)' for the product in the United States to all purchasers...Prices identified should be net of all the following: volume discounts; prompt pay discounts; cash discounts; charge-backs; shortdated product discounts; free goods; rebates" (Holder and Posner, 2001). Both lawsuits were initiated by whistleblowers. Other investigations are currently underway.

3 Methodology

3.1 OVERVIEW

We completed this project in stages. First, we analyzed Medicare reimbursement schedules and BESS data to calculate reimbursement quantities and allowed charges for the 40 drugs with the highest allowed charges in 2000. We then constructed a crosswalk to link the HCPCS drug codes used by Medicare with the more specific NDCs used by most other entities in the prescription drug market. This crosswalk was designed to accurately facilitate price comparison between drugs listed by these different coding systems. We could not link two of the 40 HCPCS codes (J7050, saline solution; and J3490, various unclassified drugs) with corresponding NDC codes; thus, we eliminated these codes from further consideration.

Upon completion of the crosswalk for the 38 remaining drugs, we began the data collection phase of the project. We identified potential sources for price collection in an attempt to obtain drug prices at different points of the prescription drug supply chain and prices achieved through different payment policies. Identified sources for data collection included major payers and providers in the public and private sector. Public sector prices were available from existing data sets. Most private sector data can only be obtained from questionnaires or other primary data collection. RTI conducted questionnaires of drug prices. We also purchased invoice price data from IMS Health to provide additional price sources for various drug distribution channels. Data received from questionnaires for 2 of the 38 drugs (J0151, adenosine; J7608, acetylcysteine) were deemed insufficient for analysis and were eliminated from consideration. IMS data did not include 6 of the 36 HCPCS remaining in the primary analysis.

Once we obtained price data, we used this information to simulate total reimbursement payments that would result from Medicare reimbursing for prescription drugs at the prices obtained for each separate data source. The goal of this analysis was to provide information about prices seen throughout the prescription drug market and to estimate reimbursement levels that would result from the adoption of reimbursement rates at these levels.

3.2 IDENTIFICATION OF HIGH REIMBURSEMENT DRUGS

3.2.1 Collecting Data on Medicare Allowed Charges and Fees

Reimbursement levels for drugs covered under Medicare Part B are set by Part B carriers; both the carriers and four durable medical equipment regional carriers (DMERC) are responsible for processing the claims. Year 2000 reimbursement schedules were obtained from DMERC web sites. To obtain Medicare Part B total allowances and utilization for each of these drugs, we first compiled a list of all drugs reimbursed by Medicare Part B and then obtained allowances and utilization for each drug from CMS's BESS. Medicare prices were calculated by averaging the reimbursement amount listed on Medicare Part B carrier and DMERC fee schedules.

3.2.2 Identifying HCPCS Codes with Highest Reimbursement

The HCPCS includes hundreds of codes for individual drug products, and many of these codes account for very small amounts of allowed charges. Therefore, to minimize respondent burden and increase response rates, we limited data collection to those HCPCS codes that currently account for significant Part B allowed charges. To identify these codes, we analyzed data from CMS's BESS. We used available year 2000 BESS data to identify the 40 drugs with the highest allowed charges. Drug codes between J0001 and J9999, between Q0132 and Q9940, selected DME-related drug codes beginning with the letter K, and A9505 were included in the analysis. Finalized year 2000 BESS data became available after data collection began and could not be used for drug selection. We subsequently analyzed full year 2000 BESS data and found that J9031 had been replaced by J7507 among the top 40 reimbursed drugs. Two of the selected drugs did not represent specific drugs and were excluded before data collection; thus, the questionnaires requested information for 38 drugs (Table 3-1). These 38 drugs represented 87 percent of total year 2000 allowed charges.

3.2.3 Developing Crosswalk between HCPCS Codes and NDCs

Nearly all entities in the prescription drug market use NDCs for tracking prescription drugs. For each identified HCPCS, the most appropriate included NDC codes were identified. A crosswalk was constructed in which each included HCPCS drug was traced to the specific NDC products it encompassed. We used Multnum's Lexicon database, which contains over 77,000 NDCs and matching HCPCS codes, to compile this list. A pharmacy consultant reviewed the crosswalk to ensure its accuracy. In cases where the NDC dosage amount did not match the HCPCS dosage amount, we applied a conversion factor to obtain the correct pricing for the HCPCS dosage.

3.3 DATA COLLECTION

The project sought to collect pricing data from as many points along drug distribution pathways as possible. In addition to actual Medicare reimbursement per HCPCS, prices and reimbursement rates were identified for most other types of entities active in the market for the included drugs. Prices and reimbursement rates were obtained from other public sources, such as Medicaid, the VA, the Department of Defense, and other federal purchasing programs. Prices were obtained from Internet pharmacies, GPOs, Medicare managed care plans, PBMs, food stores, independent retailers, chain stores, non-federal hospitals, home health care providers, health maintenance organizations (HMOs), long-term care facilities, and clinics. Data were obtained from publicly available databases, questionnaires, and by purchasing data from IMS.

Table 3-1. Annual Allowed Charge per Drug

Rank	HCPCS	Name	Dose	1997	1998	1999	2000
1	J9217	Leuprolide acetate (for depot suspension)	7.5 mg	$643,778,481	$587,281,075	$622,883,124	$636,918,103
2	Q0136	Epoetin alpha, for non ESRD use	1,000 units	$128,408,018	$212,643,312	$386,189,879	$544,266,588
3	J9202	Goserelin acetate implant	3.6 mg	$132,067,432	$260,634,728	$322,817,323	$377,626,624
4	J7644[a]	Ipratropium bromide, unit dose form	1 mg	$98,481,635	$179,587,336	$253,400,558	$350,580,605
5	J7619[b]	Albuterol unit dose form	1 mg	$203,098,600	$219,882,725	$248,856,967	$298,404,334
6	J9265	Paclitaxel	30 mg	$163,024,319	$206,261,616	$253,442,999	$287,312,312
7	J2430	Pamindronate disodium	30 mg	$45,209,486	$75,486,770	$114,573,719	$157,851,169
8	J9045	Carboplatin	50 mg	$85,473,182	$98,057,972	$117,677,241	$141,489,337
9	J9310	Rituximab	100 mg IU	$0	$0	$72,190,943	$136,925,448
10	J9206	Irinotecan	20 mg	$0	$55,706,247	$81,056,351	$118,992,696
11	J9170	Docetaxel	20 mg	$0	$37,471,267	$59,753,301	$111,823,991
12	J9201	Gemcitabine HCL	200 mg	$0	$47,225,063	$76,387,442	$101,524,582
13	J1441	Filgrastim (G-CSF) 480 mcg	480 mcg	$48,310,388	$57,551,703	$68,136,508	$84,533,752
14	J1260	Dolasetron mesylate, injection	25 mg	$0	$0	$47,433,589	$83,293,977
15	J7320	Hylan G-F 20 (Synvisc)	16 mg	$0	$0	$49,643,401	$75,167,480
16	J0640	Leucovorin calcium	50 mg	$58,967,667	$64,744,992	$67,175,585	$69,761,827
17	J1745	Infliximab, injection	10 mg	$0	$0	$0	$61,267,310
18	J2405	Ondansetron HCL	1 mg	$53,548,173	$46,261,258	$48,075,083	$55,496,061
19	J1561	Immune globulin	500 mg	$42,388,910	$35,848,846	$47,246,243	$54,855,808
20	J1440	Filgrastim (G-CSF) 300 mcg	300 mcg	$56,924,158	$49,841,275	$48,392,363	$51,668,704
21	J1562	Immune globulin intravenous	5 grams	$44,451,904	$38,786,741	$44,081,836	$51,178,608

(continued)

Table 3-1. Annual Allowed Charge per Drug (continued)

Rank	HCPCS	Name	Dose	1997	1998	1999	2000
22	J7192	Factor VIII (anti-hemophilic factor, recom)	1 IU	$32,233,085	$39,033,131	$49,799,258	$50,660,658
23	J3490[e]	unclassified drugs		$24,621,072	$77,264,018	$15,879,572	$49,164,236
24	J1626[c]	Granisetron HCL, injection	100 mcg	$68,463,770	$51,766,367	$46,849,323	$42,994,129
25	J9355	Trastuzumab	10 mg	$0	$0	$0	$36,774,303
26	J9350	Topotecan	4 mg	$0	$26,063,176	$31,814,926	$35,150,282
27	J7190	Factor VIII (anti-hemophilic factor, human)	1 IU	$31,156,316	$29,735,830	$31,505,015	$35,111,850
28	A9505	Thallous chloride TL 201	≤250 mg	$23,645,554	$25,012,779	$29,725,709	$34,593,228
29	J9000	Doxorubicin HCL	10 mg	$28,006,621	$30,220,312	$28,567,420	$30,852,360
30	J7517	Mycophenolate mofetil	250 mg	$0	$0	$0	$30,614,694
31	J2820	Sargramostim (GM-CSF)	50 mcg	$12,912,353	$17,203,115	$23,804,844	$28,099,096
32	J9390	Vinorelbine tartrate	10 mg	$20,491,095	$21,887,564	$24,584,308	$28,083,535
33	J7608[d,f]	Acetylcysteine, unit dose form	1 gram	$13,235,869	$23,607,360	$36,125,808	$26,119,057
34	J0151[f]	Adenosine	90 mg	$0	$0	$14,371,507	$24,875,107
35	J7507[g]	Tacrolimus, oral	1 mg	$9,035,128	$11,771,444	$17,469,994	$24,652,807
36	J1785	Imiglucerase	1 unit	$11,630,705	$15,154,641	$18,861,831	$24,236,009
37	J0585	Botulinum toxin type A	1 unit	$12,376,426	$14,692,465	$18,353,173	$23,151,969
38	J9293	Mitoxantrone HCL	5 mg	$21,857,177	$21,064,138	$22,865,916	$22,906,274

(continued)

Table 3-1. Annual Allowed Charge per Drug (continued)

Rank	HCPCS	Name	Dose	1997	1998	1999	2000
39	J7050[e]	Saline solution	250 cc	$13,168,023	$15,753,125	$20,155,530	$22,721,356
40	J9185	Fludarabine phosphate	50 mg	$19,041,394	$17,261,430	$19,016,065	$22,487,228
41	J9031[h]	BCG (Bacillus calmette and guerin) live	1 vial IV	$17,752,662	$18,052,482	$19,208,687	$21,625,666
Total, top 41 drugs				**$2,163,759,609**	**$2,728,816,303**	**$3,498,373,341**	**$4,465,813,160**
Total, all other drugs				**$530,696,211**	**$455,227,168**	**$490,588,443**	**$575,406,519**
Total, all drugs				**$2,694,455,814**	**$3,184,043,471**	**$3,988,961,784**	**$5,041,219,679**

a = Includes J7644 and K0518
b = Includes J7619, J7620, and K0505
c = Includes J1626 and J1625
d = Includes J7608 and K0503
e = Excluded from questionnaire
f = Data collected insufficient for analysis
g = Not among partial year BESS data, not included
h = Among top 40 in partial year data, included

3.3.1 Average Wholesale Prices

For the selected drugs, we first collected data on AWPs. Although AWPs are list prices that are largely determined by the manufacturer, are not based on actual sales, and do not incorporate discounts and rebates, they are often used as benchmarks for price comparisons. In addition, AWPs are used directly in the Medicare drug reimbursement formula. We used the *Red Book* as our primary source of AWP and direct manufacturer information. AWPs with an effective date any time during or before 2000 were recorded as the year 2000 AWP.

3.3.2 Questionnaires

Wholesalers, GPOs, PBMs, and Medicare managed care plans are among the most important entities in the prescription drug market. Since data for these organizations are not readily available, information on pricing was solicited from individual companies through questionnaires. For each category, individual firms were identified and contacted regarding participation. A point of contact was established within each firm who was in a position to participate, and we then requested participation in the questionnaire effort. Participation involved listing prices on a form, sent either by mail or as an e-mail attachment. Participants' identities and individual prices were protected by a confidentiality agreement. In each category, up to nine questionnaires were sent to firms that stated they were willing to participate (more questionnaires may have required Office of Management and Budget [OMB] clearance). In all categories, participation rates were poor. Results from the questionnaire effort are described in Section 4.1.

3.3.2.1 Wholesalers

Wholesalers purchase drugs directly from manufacturers or repackagers and in turn sell them to many other purchasers. Wholesalers serve an important function in prescription drug distribution in that they buy from a diverse set of manufacturers in relatively large quantities and then offer a broad range of prescription drug products to distributors. Wholesaler prices can be expected to reflect discounts yielded from economies of scale generated by bulk purchasing and lower transaction costs than a distributor would face if it attempted to purchase directly from manufacturers. Wholesalers are exposed to certain costs that can be expected to increase their prices, such as warehousing, shipping, and marketing and selling to distributors.

3.3.2.2 Group Purchasing Organizations

GPOs are buying consortiums intended to leverage the buying power and reduce administration costs of hospitals, clinics, and physician practices. The GPO market is relatively concentrated, with a few large GPOs representing large numbers of health care providers. GPOs capitalize on their market power and economies of scale to negotiate vendor contracts with drug suppliers to reduce the cost of medical equipment, including pharmaceuticals, for their customers. GPOs generally will not have vendor contracts with every manufacturer and thus incur higher costs when buying off-contract drugs. GPOs were asked to divulge the prices at which they purchase drugs from manufacturers or wholesalers. Although GPOs responding to the survey did not indicate if the prices they provided were covered by vendor contracts, it is likely that they were, due to the drugs' popularity and the fact that they had the prices readily available.

3.3.2.3 Pharmacy Benefits Managers

PBMs are firms that specialize in managing the delivery and finances of the prescription drug benefits of managed care plans, such as HMOs and preferred provider organizations (PPOs). PBMs help managed care plans reduce administration costs by specializing in claims processing, establishing and maintaining formularies, and promoting cost saving through disease management and educational programs. As pharmaceutical costs have increased in recent years, an increasingly important purpose of PBMs is to contain prescription drug costs. PBM prices consist of the amounts that insurance companies reimburse for drug coverage of their customers and represent a price at the final point of the drug distribution. Of the two PBMs that returned surveys, one only reported prices for a few NDC codes and the other reported prices by HCPCS for nearly all of the drugs. These HCPCS prices were nearly identical to Medicare reimbursement.

3.3.2.4 Medicare Managed Care

Most of the Medicare managed care plans contacted during the survey indicated that they used PBMs to manage their prescription drug benefits. The only plans that did participate in the survey were affiliated with Medicare Part B carriers and used the same policy of reimbursing at 95 percent of AWP for both fee-for-service (FFS) and Medicare managed care enrollees. Differences between these Medicare HMOs' prices and the current Medicare reimbursement rates were due to differences in classification of NDCs to HCPCS among different carriers. Some Medicare managed care plans offer an expanded prescription drug coverage beyond that included in Medicare Part B, but it is unclear whether the participating firms offered additional coverage and, if so, how they set reimbursement for these drugs.

3.3.2.5 Internet Pharmacies

Internet pharmacy retailers have been increasing in popularity due to their convenience and low overhead costs. They offer an easily accessible and comparable source of prescription drug prices for end users. Some Internet pharmacies are affiliated with large, national pharmacy chains and offer a large selection at the same cost, before shipping, as found in their physical stores. Many other small-scale and independent Internet pharmacies generally offer lower prices on a more limited selection of drugs.

3.3.3 Other Public Payers

Aside from Medicare and Medicaid, other government drug purchasing arrangements were analyzed. Rates for included drugs were identified from the Federal Supply Schedule (FSS), National Contracts, Blanket Purchase Agreements (BPAs), and the "Big 4." All of these sources provide prices for drugs purchased at the beginning of drug distribution channels. Public payer prices were calculated as the minimum of any of these government purchasing prices.

3.3.3.1 Federal Supply Schedule

The FSS is a purchasing arrangement managed by the VA. The FSS is generally available to all government agencies and covers most commercial products purchased by the government. Manufacturers must list their products under the FSS in order for their drugs to be reimbursed by Medicaid. FSS contracts are awarded for specific products with one or more contractors and exhibit indefinite delivery and quantity. These prices are negotiated with the goal of obtaining or beating the Most Favored Commercial Customer (MCC) price. The FSS covers all but one drug considered in this analysis (J7320, Hylan G-F) and consistently exhibited a very low price.

3.3.3.2 National Contracts

The VA can establish national contracts through a competitive bidding process. National contracts are awarded to specific suppliers and specify quantities and effective dates. National contract prices were identified only for for NDCs included in J9202 (goserelin acetate implant). This price was lower than that of all other sources and was 69 percent lower than Medicare reimbursement.

3.3.3.3 Blanket Purchase Agreements

BPAs are basically "charge-accounts" established for products covered under the FSS. For government agencies that make continual purchases, BPAs are a mechanism by which they can automate the purchase and delivery of products and facilitate negotiation of higher volume discounting. They are open-ended contracts with no specific quantity or dates. None of the drugs included in this study were covered by a BPA.

3.3.3.4 "FSS Big 4"

The VA is responsible for administering Master Agreements and Pharmaceutical Pricing Agreements with covered drug manufacturers (Section 603 of the Veterans Health Care Act of 1992 [P.L. 102-585]). These agreements set Federal Ceiling Prices (FCPs) for the "Big 4" government drug procurement agencies: the VA, Department of Defense, Coast Guard, and Department of Health and Human Services. FCPs require that prices for covered drugs not exceed 76 percent of the non-federal Average Manufacturer Price (AMP). Some FCPs are obtained at prices below this threshold. FCPs were identified for 16 drugs included in this study. On average, FCPs were 13 percent lower than the corresponding FSS prices.

3.3.3.5 Medicaid

Medicaid is a federally supported and mandated program but is administered by the states. Prescription drug benefits are not required, but every state currently offers at least some coverage. The Medicaid program consists of two main components: payments to pharmacies and physicians for providing drugs to beneficiaries, and rebates from the manufacturers of those drugs to Medicaid. Medicaid beneficiaries obtain prescription drugs from providers either for free or pay a small co-payment. Medicaid reimburses the supplier a certain amount based on their reimbursement formula in addition to a dispensing fee, and then Medicaid is in turn paid a rebate by manufacturers. Manufacturers agree to provide this rebate to Medicaid in order to be included in the Medicaid program. These rebates are kept confidential and are subject to auditing.

Medicaid reimburses pharmacies for the drug acquisition cost through prescription drug benefits, while physician administered drugs are usually included in the physician payment process. Each state Medicaid agency implements its own acquisition reimbursement plan, but there are restrictions on federal matching funds. States are limited to setting acquisition reimbursement rates no higher than the lower of the (1) EAC or (2) providers' usual and customary charge. Most states calculate EAC by subtracting a percentage from AWP, adding a percentage to the Wholesaler Acquisition Cost (WAC), or using the lesser of the results of either method. The WAC is the manufacturer's list price to wholesalers and is thus lower than the AWP, which is the manufacturer's suggested price for wholesalers to charge their customers. States' acquisition reimbursement must also be below the Federal Upper Limit (FUL) price, calculated as 150 percent of the lowest published price for any equivalent drug in quantities of 100. In addition to reimbursement for acquisition costs, states also pay a dispensing fee. Individual state EAC formulas and dispensing fees are provided in Table 3-2.

States report the number of units of each drug they reimbursed as well as the total amount of reimbursement paid for each NDC each year as part of the Medicaid Drug Rebate Initiative (MDRI). MDRI data were used to determine the Medicaid reimbursement rates, although they do not include manufacturer rebates. The manufacturer rebate agreement stipulates that the states receive the greater of (1) a percentage discount (15.1 percent for innovator drugs and 11 percent for non-innovator drugs) off the AMP, or (2) the difference between AMP and the lowest price available to any customer. The rebate formula also prevents drug prices from increasing faster than the Consumer Price Index (CPI). AMP is

Table 3-2. Year 2000 Medicaid Dispensing Fees, Co-payments, and Reimbursement by State

State	Dispensing Fee	Co-payment	Reimbursement Formula
Alabama	$3.99 – $5.40	$0.50 – $3.00	WAC + 9.2% if available, otherwise AWP – 10%
Alaska	$3.45 – $11.46	$0.00 – $2.00	AWP – 5%
Arizona			AWP – 10%
Arkansas	$5.51	$0.00 – $3.00	AWP – 10.5%
California	$4.05	$1.00	AWP – 5%
Colorado	$4.08	$0.50 – $2.00	lesser: AWP – 10% or WAC + 18%
Connecticut	$4.10		AWP – 12% + $4.10
Delaware	$3.65		AWP – 12.9%
District of Columbia	$3.75	$1.00	AWP – 10%
Florida	$4.23		AWP – 13.25%
Georgia		$0.50	AWP – 10% + $4.63
Hawaii	$4.67		AWP – 10.5%
Idaho	$4.94		AWP – 11%
Illinois	$4.17		Brand = lesser: AWP – 10% or WAC + 8%. Generic = lesser: AWP – 12% or WAC + 12%.
Indiana	$4.00	$0.50 – $3.00	AWP – 10%
Iowa	$4.18 – $6.42	$0.00 – $1.00	AWP – 10%
Kansas	$4.50	$2.00	AWP – 10%
Kentucky	$4.51		AWP – 10%
Louisiana	$5.77	$0.50 – $3.00	Independent = AWP – 15%. Chain = AWP – 16.5%.
Maine	$3.10 – $5.35	$0.50 – $3.00	AWP – 10%
Maryland	$4.21	$0.00 – $1.00	Lesser: AWP – 10% or WAC + 10%
Massachusetts	$3.00	$0.00 – $0.50	WAC + 10%
Michigan	$3.77	$0.00 – $1.00	Lesser: AWP – 13.5% or WAC + 15.1%
Minnesota	$3.65		AWP – 9%
Mississippi	$4.91	$0.00 – $1.00	AWP – 10%
Missouri	$4.09	$0.50 – $2.00	AWP – 10.43%
Montana	$4.20	$0.00 – $2.00	AWP – 10%
Nebraska	$4.66	$1.00	AWP – 8.71%
Nevada	$4.76		AWP – 10%
New Hampshire	$2.50	$0.00 – $1.00	AWP – 12%
New Jersey	$3.73 -$4.07		AWP – 10%
New Mexico	$2.00 – $4.00		AWP – 12.5%
New York	$3.50 – $4.50	$0.00 – $2.00	AWP – 10%

(continued)

Table 3-2. Medicaid Dispensing Fees, Co-payments, and Reimbursement by State (continued)

State	Dispensing Fee	Co-payment	Reimbursement Formula
North Carolina	$5.60	$1.00	AWP – 10%
North Dakota	$4.60		AWP – 10%
Ohio	$3.70		WAC + 11% if available, otherwise AWP – 11%
Oklahoma	$4.15	$1.00 – $2.00	AWP – 10.5%
Oregon	$3.91 – $4.28		AWP – 11%
Pennsylvania	$4.00 – $5.00	$0.00 – $2.00	AWP – 10%
Rhode Island	$2.85 – $3.40		WAC + 5%
South Carolina	$4.05	$2.00	AWP – 10%
South Dakota	$4.75 – $5.55	$0.00 – $2.00	AWP – 10.5%
Tennessee	TennCare, information varies		
Texas	$5.27 + 2%		AWP – 15%; WAC + 12%
Utah	$3.90 – $4.40	$1.00	AWP – 12%
Vermont	$4.25	$1.00 – $2.00	AWP – 11.9%
Virginia	$4.25	$0.00 – $1.00	AWP – 9%
Washington	$4.06 – $5.02		AWP – 11%
West Virginia	$3.90 – $4.90	$0.00 – $2.00	AWP – 12%
Wisconsin	$4.88 – $40.11	$0.00 – $1.00	AWP – 10%
Wyoming	$4.70	$0.00 – $2.00	AWP-4% (AWP – 11% pending)

Source: Data collected by MayaTech under a subcontract.

defined in Section 1927 of the Social Security Act, 42, U.S.C. 1396s subsection (K) 1 as "the average unit price paid to the Manufacturer for the drug in the States by wholesalers for drugs distributed to the retail pharmacy class of trade...." The AMP reflects true prices, net of all rebates and discounts, for customers of manufacturers except for the FSS and certain other public payers, and can be audited to verify accuracy. This is commonly known as a "most-favored customer" or "most-favored nation" clause because, if another customer is offered a lower price, Medicaid receives a larger rebate. It should be noted that the current reimbursement method does not guarantee that Medicaid will receive the "best price" for a drug, even when the difference between the AMP and the best price is greater than 15.1 percent. The acquisition cost is usually based on the AWP minus a percentage, while the rebate is based on the difference between the AMP and the best price; thus, the acquisition cost minus the rebate will not necessarily equal the best price.

Since the AMP and manufacturer rebate amounts are not publicly available, the prices listed for Medicaid in this report do not reflect these discounts. Individual state dispensing fees, co-payments, and reimbursement formulas are listed in Table 3-2. These data were collected through a telephone survey of state Medicaid administrators by our subcontractor, The Mayatech Corporation.

3.3.4 IMS Data

A significant portion of the data analyzed in this project was purchased from IMS Health. IMS specializes in market intelligence in the health and pharmaceutical industries and constitutes an accurate, existing data source for pharmaceutical pricing. Data for 30 of the included HCPCS were obtained from IMS. IMS collects the prices that outlets in certain price categories pay to wholesalers and manufacturers for prescription drugs. The price categories included are food stores, chain pharmacies, independent pharmacies, non-federal hospitals, federal facilities, long-term care facilities, clinics, and closed-wall HMOs, home health care, and mail-order pharmacies. IMS data also include a quantity-weighted average price.

IMS collects these data by photographing all of the sales invoices of the outlets and by conducting a near-census of warehouses, which includes 328 of 370 wholesalers. These data reflect invoice line-item prices. IMS states that actual final sale prices may include rebates, discounts, or charge-backs below the amount listed by IMS. A prompt-payment discount is a common type of rebate that allows purchasers to pay less than the invoice price if payment is made by a certain date. IMS data also do not capture bottom-line invoice discounts, which reduce the total amount for an order containing multiple products. After a sale, purchasers may obtain charge-backs, which are rebates or refunds that an outlet has negotiated directly from a manufacturer. Although IMS data list a variety of price categories, all data represent the prices these outlets paid to wholesalers and manufacturers and not the prices that these outlets charge their customers. IMS reports that 98 percent of purchases made by retail outlets were from wholesalers.

3.4 CALCULATING HCPCS PRICES

After we collected prices and reimbursement data from each price category, we used the data to determine prices per HCPCS for each individual category. The first step in this process involved using the crosswalk to convert NDC prices in terms of the specified HCPCS quantities. Once the prices were listed in terms of HCPCS, we calculated the final data point for each HCPCS for each category as the median of all included prices.

Individual HCPCS codes in the analysis included from 2 to 64 different NDC codes. Single-source drugs generally include several NDCs indicating different volumes of the drug and are generally priced so that all NDCs yield a constant price per amount of drug. Multi-source drugs include NDCs for different product sizes as well as different manufacturers and may include both brand-name and generic products. Price variation exists between, and among, brand name and generic drugs. This variation is a possible source of inaccuracy, since even quantity-converted NDC prices within a single HCPCS can vary widely, especially for multi-source drugs. Prices were usually obtained for just a few NDCs from each source for each HCPCS, and thus the HCPCS price may be affected by which of these NDC prices were included.

This analysis sought prices from 20 different price categories to correspond with 40 of Medicare's most commonly reimbursed HCPCS, thus constituting 800 separate data points. Two HCPCS were subsequently eliminated because insufficient data were identified to calculate HCPCS prices from a majority of included price categories. Two others were eliminated because they could not be reconciled with specific NDCs. For the remaining 36 HCPCS, 296 of 324 (91 percent) data points were calculated for the analysis of questionnaire data. IMS data did not include prices for six of the remaining 36 HCPCS. For the remaining 30 HCPCS (IMS subset), prices for 325 of 330 (98 percent) data points were included.

3.5 REIMBURSEMENT SIMULATION

3.5.1 Estimating Values for Missing HCPCS

Estimating values for missing data points is necessary for simulating the total reimbursement that would be incurred if Medicare reimbursement rates were set as equal to the HCPCS prices calculated in the study. Missing data values include the 66 data points corresponding to the IMS category prices for the six HCPCS that were included in the questionnaire data but were not available from IMS, as well as 33 other data points for which we were unable to identify a price. No attempt was made to estimate values for the data points among the HCPCS excluded in the IMS data, but for the other 33 data points, we substituted the Medicare allowed charge for the missing data points. To test the validity and effect of this assumption, we compared results using this method to results using an alternative method for estimating the value of missing data points. In the alternative method, we calculated the percentage difference between current Medicare reimbursement and the corresponding price category for only those HCPCS where a price was identified for that price category. We then used this percentage difference to adjust the Medicare reimbursement to generate an expected value for the missing HCPCS data points. Comparing results of these two methods revealed that the use of unadjusted Medicare values yielded slightly lower total reimbursement for Medicare HMO rates and raised reimbursement for all other price categories from 0 percent to 2.03 percent relative to the alternative method, with an average change of 0.48 percent. For the analysis, unadjusted Medicare rates were used to estimate missing data points, since we considered this to be the more conservative method.

3.5.2 Generating Simulated Reimbursement Amounts

Once we had all necessary data points, the total reimbursement for the included drugs was simulated to identify the costs that would be incurred if the various prices exhibited in the market were used as the reimbursement rates. Each data point was multiplied by the year 2000 Medicare allowed charge quantity for the corresponding HCPCS, and the total reimbursement was summed for each price category. The resulting totals can be directly compared with each other to reveal the percent changes in total reimbursement that could have occurred in 2000, had Medicare reimbursed at prices paid or reimbursed by other price categories and quantity demanded remained constant.

3.5.3 Comparing and Corroborating Results

At the conclusion of the analysis, we sought data from other existing analyses and compared them to our results. Data were obtained from OEI and GAO reports for many of the included drugs. These data included VA prices, which are similar to the public payer prices in this analysis, as well as other estimated measure of actual wholesale prices, such as catalog prices. In addition to other reports, maximum allowed charge amounts were identified from the DMEPOS Competitive Bidding Demonstration currently ongoing in San Antonio, Texas, for the two DME reimbursed drugs in this analysis.

4 Results

4.1 QUESTIONNAIRE RESPONSE

This analysis was initiated in the hope that accurate data could be collected through questionnaires sent to GPOs, PBMs, wholesalers, and Medicare managed care plans. We sought the participation of nine companies from each of the four categories. Unfortunately, companies were generally unwilling to respond (Table 4-1). The questionnaire process involved identifying prospective participants in each category and then contacting the appropriate person or office within the organization. If the point of contact was willing to consider or discuss the questionnaire, the questionnaire itself or a letter of intent was provided upon request via mail, fax, or e-mail. After this point, we made repeated follow-up calls to the point of contact until they either returned the questionnaire, refused to participate, or became unavailable.

The initial impediment to the questionnaire effort was establishing a point of contact within a company. The most common barriers to establishing a contact included locating personnel within the company in a position to participate in the questionnaire and convincing an employee to discuss the questionnaire. Once a point of contact was established within an organization, the contact often cited several reasons for declining to participate in the questionnaire. The most common reason given was that the company was prohibited from divulging the information due to contract stipulations with suppliers or internal company policy. Other reasons given by contacts for nonparticipation included an

Table 4-1. Questionnaire Responses

	Questionnaire Participation				
	Identified Companies	Point of Contact Established	Agreed to Consider	Agreed to Participate	Returned Questionnaire
Medicare HMO	69	31	14	6	2
PBM	69	39	19	9	2
Wholesaler	64	40	16	10	3
GPO	39	31	14	6	2

unwillingness to spend the time to complete the form, not knowing how to locate the information, the belief that participation was not in the interests of their company, and suspicions about our intentions. A few contacts became unreachable after agreeing to participate in the study. We speculate that past and current legal investigations of drug pricing contributed to organizations' general reluctance to provide price information.

Obviously, the overall response rates were very low. Consequently, the questionnaire data must be interpreted very cautiously. We believe that the IMS data provide a better indication of existing price levels. However, for completeness, we also present results from the questionnaires.

4.2 ANALYSIS OF PRICES, BY CATEGORY

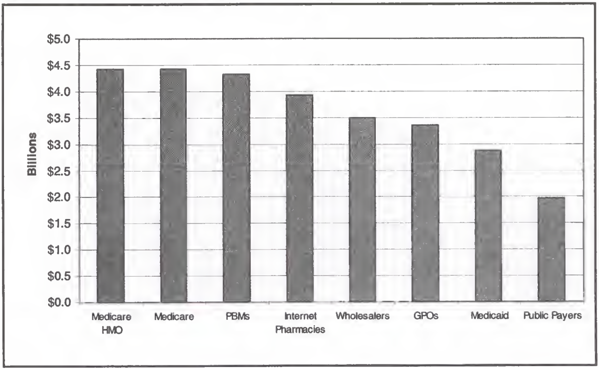
4.2.1 Results of Data Collection

Table 4-2 and Figure 4-1 show simulations based on the prices collected from Medicare managed care plans, PBMs, Internet pharmacies, wholesalers, and GPOs. Medicare prices, Medicaid prices (without rebates), and public payer prices are also shown. The table simulates Medicare Part B reimbursement, which includes payments made by Medicare as well as co-payments by its beneficiaries, for 36 prescription drugs. Year 2000 Medicare payment for the 38 drugs included in the questionnaire was $4.4 billion, out of a total of $5.04 billion identified for all drugs in the BESS analysis.

Table 4-2. Simulated Reimbursement, Primary Data

Price Source	Total Reimbursement	Difference from Medicare ($)	Difference from Medicare (%)
Medicare HMO	$4,422,275,138	$750,047	0.0%
Medicare	$4,421,525,091	—	—
PBMs	$4,330,442,741	–$91,082,350	–2.1%
Internet Pharmacy	$3,925,428,243	–$496,096,848	–11.2%
Wholesalers	$3,494,594,997	–$926,930,094	–21.0%
GPOs	$3,359,400,145	–$1,062,124,946	–24.0%
Medicaid	$2,875,266,573	–$1,546,258,517	–35.0%
Public Payers	$1,963,955,064	–$2,457,570,027	–55.6%

Figure 4-1. Simulated Reimbursement, Primary Data



The only Medicare managed care plans that participated in the questionnaire were affiliated with Medicare Part B carriers and used Medicare reimbursement policies for their prescription drug benefit. Differences in their calculation of AWPs led to them exhibiting reimbursement rates slightly higher than Medicare's.

Reimbursement rates reported by the PBMs were generally the same or slightly lower than Medicare reimbursement. For the other private entities that we obtained data for, simulated reimbursement totals ranged from 11.2 percent to 55.6 percent below Medicare. Simulated reimbursement was 35 percent lower with Medicaid prices and 55.6 percent lower with public payer prices.

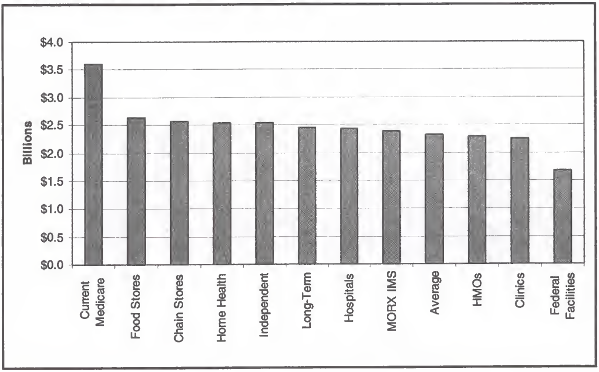
4.2.2 Results of IMS Data

Prices in the data purchased from IMS were generally lower than those collected by questionnaire. IMS data were available for 30 of the drugs included in this analysis. For these 30 drugs, Medicare reimbursement in 2000 was $3.6 billion. For this subset of drugs, simulated reimbursement with IMS prices ranged from 26.8 percent to 53.3 percent below Medicare reimbursement. Simulated reimbursement was substantially lower for every distribution channel, with HMOs, clinics, and federal facilities having the lowest levels. Reimbursement for the subset of analysis drugs included in IMS data are listed in Table 4-3 and shown in Figure 4-2.

Table 4-3. Simulated Reimbursement, IMS Data

Price Source	Total Reimbursement	Difference from Medicare ($)	Difference from Medicare (%)
Current Medicare	$3,602,168,238	—	—
Food Stores	$2,638,132,617	–$964,035,620	–26.8%
Chain Stores	$2,562,850,609	–$1,039,317,628	–28.9%
Home Health	$2,541,674,319	–$1,060,493,919	–29.4%
Independent	$2,541,467,331	–$1,060,700,907	–29.4%
Long-Term	$2,453,520,426	–$1,148,647,811	–31.9%
Hospitals	$2,434,696,752	–$1,167,471,485	–32.4%
MORX IMS	$2,387,785,968	–$1,214,382,269	–33.7%
Average	$2,317,154,103	–$1,285,014,134	–35.7%
HMOs	$2,284,432,885	–$1,317,735,353	–36.6%
Clinics	$2,251,342,513	–$1,350,825,725	–37.5%
Federal Facilities	$1,681,911,556	–$1,920,256,682	–53.3%

Figure 4-2. Simulated Reimbursement, IMS Data



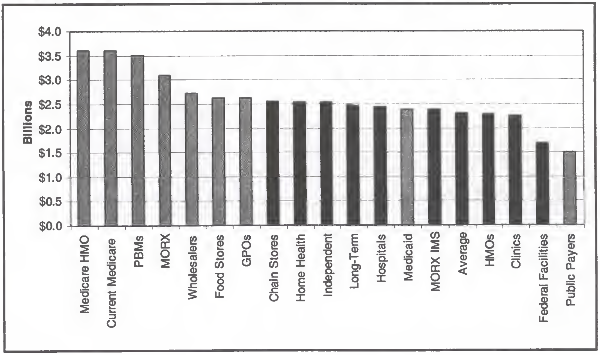
4.2.3 Results of Primary Data Collection and IMS Data

When analyzing IMS data together with data from the primary analysis, we limit analysis to the 30 drugs for which IMS data are available (Table 4-4 and Figure 4-3). Analysis of the differences between the prices and reimbursement rates among the included categories show that prices obtained through questionnaires appear to be unrealistically high. The prices provided by wholesalers are higher than all of the IMS prices, even though IMS states that 98 percent of the purchases by retailers in their survey were from wholesalers. Additionally, the PBMs responding to the questionnaire listed reimbursement rates much higher than those listed for HMOs in the IMS data, even though most HMOs use PBMs to determine prices or reimbursement rates. The data we collected from Internet pharmacies and public payers compare more favorably with data obtained from IMS. Public payer prices were slightly lower than IMS federal facilities prices, which would be expected as the public payer price is calculated using the minimum price available to any part of the federal government, excluding Medicaid, whereas the IMS federal facilities price was

Table 4-4. Simulated Reimbursement, Primary and IMS Data, IMS Drug Subset

Price Source	Total Reimbursement	Difference from Medicare ($)	Difference from Medicare (%)
Medicare HMO	$3,611,582,735	$9,414,498	0.3%
Current Medicare	$3,602,168,238	—	—
PBMs	$3,515,979,860	–$86,188,377	–2.4%
MORX	$3,096,930,584	–$505,237,654	–14.0%
Wholesalers	$2,726,519,090	–$875,649,148	–24.3%
Food Stores	$2,638,132,617	–$964,035,620	–26.8%
GPOs	$2,621,577,289	–$980,590,948	–27.2%
Chain Stores	$2,562,850,609	–$1,039,317,628	–28.9%
Home Health	$2,541,674,319	–$1,060,493,919	–29.4%
Independent	$2,541,467,331	–$1,060,700,907	–29.4%
Long-Term	$2,453,520,426	–$1,148,647,811	–31.9%
Hospitals	$2,434,696,752	–$1,167,471,485	–32.4%
Medicaid	$2,387,920,716	–$1,214,247,521	–33.7%
MORX IMS	$2,387,785,968	–$1,214,382,269	–33.7%
Average	$2,317,154,103	–$1,285,014,134	–35.7%
HMOs	$2,284,432,885	–$1,317,735,353	–36.6%
Clinics	$2,251,342,513	–$1,350,825,725	–37.5%
Federal Facilities	$1,681,911,556	–$1,920,256,682	–53.3%
Public Payers	$1,502,697,324	–$2,099,470,913	–58.3%

Figure 4-3. Simulated Reimbursement, Primary and IMS Data, IMS Drug Subset



weighted by actual sales. The Internet pharmacy prices obtained in the primary analysis are the retail prices of drugs listed on the pharmacy web sites, while the MORX value is the price at which IMS determined mail order pharmacies were purchasing their drugs. Thus, if these prices are accurate, the difference between the Internet pharmacy and the IMS MORX reimbursement would represent a 30 percent markup by mail order/Internet pharmacies.

4.3 RESULTS BY DRUG

In addition to simulating total reimbursement for all drugs, we also analyzed prices for individual drugs. As part of the analysis, we calculated three summary statistics for each drug: the coefficient of variation (CV), the percent spread between the lowest price and the highest price (excluding AWP and Medicare), and the percent reduction from the Medicare reimbursement rate to the lowest price. The CV is defined as the standard deviation divided by the mean price. The standard deviation provides information about how "volatile" the drug prices were among the price categories. Dividing the standard deviation by the mean controls for differences in drug prices between different drugs, so that CVs are directly comparable as measures of variability. The percent spread between the minimum price and the maximum price illustrates the degree of difference at the bounds. The percent difference between the Medicare reimbursement rate and the lowest price was calculated to allow calculation of possible savings due to adoption of the lowest price as the reimbursement rate.

4.3.1 Primary Analysis Drugs

A large degree of variability for prices and reimbursement rates for individual drugs exists among the data included in the primary analysis. Five drugs—ipratropium bromide (J7644), albuterol (J7619), leucovorin calcium (J0640), immune globulin intravenous (J1562), and granisetron (J1626)—had coefficients of variation among the price categories of more than 0.5 (excluding AWP and current Medicare). The drug with the largest difference from the Medicare price was leucovorin calcium (J0640), in which current Medicare reimbursement was 16 times higher than the public payer price. Overall, public payer prices were the lowest for 27 of the 36 drugs, and Medicaid rates were lowest for seven drugs (Tables 4-5 and 4-6). GPO prices were lowest for albuterol (J7619) and

Table 4-5. Prices per Drug, Primary Data

HCPCS, Name, Dose	AWP	Medicare	Medicare HMOs	PBMs	Whole-salers	GPOs	MORX	Medicaid	Public Payers
J9217, Leuprolide acetate, depot suspension, 7.5 mg	594.65	569.32	575.29	570.77	513.06	495.70	530.52	526.43	257.00
Q0136, Epoetin alpha, for non E5RD use, 1,000 units	12.47	11.66	11.62	11.38	10.83	10.81	12.06	6.85	6.90
J9202, Goserelin acetate implant, 3.6 mg	469.99	446.50	446.49	430.04	389.15	377.91	426.33	392.81	140.12
J7644, Ipratropium bromide, unit dose form, 1 mg	3.52	3.34	NA	3.33	0.79	0.80	2.80	0.53	0.83
J7619, Albuterol, unit dose form, 1 mg	0.49	0.47	0.39	0.47	0.07	0.06	0.27	0.08	0.07
J9265, Paclitaxel, 30 mg	182.63	173.55	169.97	164.08	148.58	146.84	153.51	171.26	107.59
J2430, Pamindronate disodium, 30 mg	266.54	241.09	253.20	253.21	227.67	187.19	234.68	131.93	126.96
J9045, Carboplatin, 50 mg	109.30	99.33	101.77	111.11	95.91	95.45	100.21	65.43	51.71
J9310, Rituximab, 100 mg IU	464.53	423.04	441.30	242.02	NA	382.78	393.49	313.68	239.61
J9206, Irinotecan, 20 mg	132.08	117.60	125.47	125.47	108.30	108.48	111.44	107.13	65.65
J9170, Docetaxel, 20 mg	313.51	274.70	283.65	297.83	257.07	252.06	266.43	193.66	152.13
J9201, Gemcitabine HCL, 200 mg	107.50	89.53	98.35	102.13	88.15	88.20	90.91	41.11	47.42
J1441, Filgrastim (G-C5F), 480 mcg	300.40	266.62	273.03	274.87	249.24	241.50	174.12	222.34	154.24
J1260, Dolasetron mesylate, injection, 25 mg	41.63	38.44	37.38	39.55	35.56	35.05	37.19	19.24	13.37
J7320, Hylan G-F 20, 16 mg	215.65	205.63	204.86	213.86	184.60	181.00	209.36	NA	NA
J0640, Leucovorin calcium, 50 mg	18.96	20.41	26.80	NA	5.13	8.75	3.72	5.33	1.27
J1745, Infliximab, injection, 10 mg	66.57	58.65	60.92	59.91	52.84	51.46	56.31	10.35	32.83
J2405, Ondansetron HCL, 1 mg	6.41	6.07	5.77	5.87	5.41	5.37	5.77	4.62	1.39
J1561, Immune globulin, 500 mg	45.00	44.69	61.56	25.16	NA	32.50	31.26	31.82	10.41
J1440, Filgrastim (G-CSF) 300 mcg, 300 mcg	182.86	167.16	171.38	172.48	154.57	116.78	161.11	127.93	97.23
J1562, Immune globulin intravenous, 5 grams	274.07	381.37	403.75	67.20	NA	260.00	281.48	31.90	107.85
J7192, Factor VIII anti-hemophilic, recombinant, 1 IU	1.18	1.13	1.12	1.02	NA	NA	0.71	0.95	0.51
J1626, Granisetron HCL, injection, 100 mcg	19.52	18.52	18.54	17.86	16.01	15.69	4.12	1.88	7.92
J9355, Trastuzumab, 10 mg	53.99	49.93	51.29	50.85	NA	44.49	44.89	NA	30.77
J9350, Topotecan, 4 mg	665.85	580.00	617.50	632.56	546.00	562.12	559.51	520.82	307.25
J7190, Factor VIII anti-hemophilic, human, 1 IU	0.92	0.86	0.86	0.78	NA	NA	0.78	0.76	0.32
A9505, Thallous chloride TL 201, ≤250 mg	82.27	41.31	27.50	NA	NA	NA	NA	NA	15.16
J9000, Doxorubicin HCL, 10 mg	39.43	38.00	27.19	42.82	23.10	21.99	26.16	18.14	5.70
J7517, Mycophenolate mofetil, 250 mg	2.41	2.17	2.22	2.29	2.16	2.11	2.13	2.00	1.36
J2820, 5argramostim (GM-C5F), 50 mcg	28.86	27.14	26.87	27.17	23.66	24.59	24.39	13.18	10.06
J9390, Vinorelbine tartrate, 10 mg	83.45	73.62	73.99	79.28	68.43	71.96	71.09	61.51	37.78
J1785, Imiglucerase, 1 unit	3.95	3.74	3.75	3.85	NA	NA	NA	NA	2.81
J0585, Botulinum toxin type A, 1 unit	4.63	4.38	4.39	4.40	NA	3.70	3.94	0.56	2.70
J9293, Mitoxantrone HCL, 5 mg	234.76	221.61	223.02	224.21	210.79	206.68	216.69	199.11	90.56
J9185, Fludarabine phosphate, 50 mg	272.50	233.61	241.77	258.88	223.45	218.00	234.09	137.25	112.60
J9031, BCG (bacillus calmette and guerin) live, 1 vial IV	168.33	161.54	159.91	159.91	NA	125.67	128.35	157.20	79.62

Table 4-6. Price Percent Difference from Medicare, Primary Data

HCPCS	AWP	MedHMO	PBM	Whole-saler	GPO	MORX	Medicaid	Public Payer
J9217, Leuprolide acetate for depot suspension, 7.5 mg	4.4%	1.1%	0.3%	–9.9%	–12.9%	–6.8%	–7.5%	–54.9%
Q0136, Epoetin alpha, for non ESRD use, 1,000 units	6.9%	–0.3%	–2.4%	–7.1%	–7.3%	3.5%	–41.2%	–40.8%
J9202, Goserelin acetate implant, 3.6 mg	5.3%	0.0%	–3.7%	–12.8%	–15.4%	–4.5%	–12.0%	–68.6%
J7644, Ipratropium bromide, unit dose form, 1 mg	5.5%	NA	–0.3%	–76.4%	–76.1%	–16.2%	–84.2%	–75.3%
J7619, Albuterol, unit dose form, 1 mg	5.1%	–17.0%	0.0%	–84.3%	–86.3%	–42.4%	–83.1%	–85.9%
J9265, Paclitaxel, 30 mg	5.2%	–2.1%	–5.5%	–14.4%	–15.4%	–11.5%	–1.3%	–38.0%
J2430, Pamindronate disodium, 30 mg	10.6%	5.0%	5.0%	–5.6%	–22.4%	–2.7%	–45.3%	–47.3%
J9045, Carboplatin, 50 mg	10.0%	2.5%	11.9%	–3.5%	–3.9%	0.9%	–34.1%	–47.9%
J9310, Rituximab, 100 mg IU	9.8%	4.3%	–42.8%	NA	–9.5%	–7.0%	–25.9%	–43.4%
J9206, Irinotecan, 20 mg	12.3%	6.7%	6.7%	–7.9%	–7.7%	–5.2%	–8.9%	–44.2%
J9170, Docetaxel, 20 mg	14.1%	3.3%	8.4%	–6.4%	–8.2%	–3.0%	–29.5%	–44.6%
J9201, Gemcitabine HCL, 200 mg	20.1%	9.8%	14.1%	–1.5%	–1.5%	1.5%	–54.1%	–47.0%
J1441, Filgrastim (G-CSF), 480 mcg	12.7%	2.4%	3.1%	–6.5%	–9.4%	–34.7%	–16.6%	–42.1%
J1260, Dolasetron mesylate, injection, 25 mg	8.3%	–2.8%	2.9%	–7.5%	–8.8%	–3.3%	–50.0%	–65.2%
J7320, Hylan G-F 20, 16 mg	4.9%	–0.4%	4.0%	–10.2%	–12.0%	1.8%	NA	NA
J0640, Leucovorin calcium, 50 mg	–7.1%	31.3%	NA	–74.9%	–57.1%	–81.8%	–73.9%	–93.8%
J1745, Infliximab, injection, 10 mg	13.5%	3.9%	2.1%	–9.9%	–12.3%	–4.0%	–82.3%	–44.0%
J2405, Ondansetron HCL, 1 mg	5.6%	–4.9%	–3.4%	–10.9%	–11.5%	–5.0%	–23.9%	–77.1%
J1561, Immune globulin, 500 mg	0.7%	37.7%	–43.7%	NA	–27.3%	–30.0%	–28.8%	–76.7%
J1440, Filgrastim (G-CSF) 300 mcg, 300 mcg	9.4%	2.5%	3.2%	–7.5%	–30.1%	–3.6%	–23.5%	–41.8%
J1562, Immune globulin intravenous, 5 grams	–28.1%	5.9%	–82.4%	NA	–31.8%	–26.2%	–91.6%	–71.7%
J7192, Factor VIII anti-hemophilic, recombinant, 1 IU	4.2%	–1.0%	–9.9%	NA	NA	–37.2%	–15.8%	–54.9%
J1626, Granisetron HCL, injection, 100 mcg	5.4%	0.1%	–3.6%	–13.6%	–15.3%	–77.7%	–89.9%	–57.2%
J9355, Trastuzumab, 10 mg	8.1%	2.7%	1.8%	NA	–10.9%	–10.1%	NA	–38.4%
J9350, Topotecan, 4 mg	14.8%	6.5%	9.1%	–5.9%	–3.1%	–3.5%	–10.2%	–47.0%
J7190, Factor VIII anti-hemophilic, human, 1 IU	7.0%	–0.6%	–9.3%	NA	NA	–9.5%	–11.9%	–62.8%
A9505, Thallous chloride TL 201, ≤250 mg	99.1%	–33.4%	NA	NA	NA	NA	NA	–63.3%
J9000, Doxorubicin HCL, 10 mg	3.8%	–28.4%	12.7%	–39.2%	–42.1%	–31.2%	–52.3%	–85.0%
J7517, Mycophenolate mofetil, 250 mg	10.9%	2.3%	5.4%	–0.5%	–2.9%	–2.1%	–8.1%	–37.6%
J2820, Sargramostim (GM-CSF), 50 mcg	6.3%	–1.0%	0.1%	–12.8%	–9.4%	–10.1%	–51.4%	–62.9%
J9390, Vinorelbine tartrate, 10 mg	13.3%	0.5%	7.7%	–7.1%	–2.3%	–3.4%	–16.5%	–48.7%
J1785, Imiglucerase, 1 unit	5.6%	0.2%	2.9%	NA	NA	NA	NA	–24.8%
J0585, Botulinum toxin type A, 1 unit	5.6%	0.1%	0.5%	NA	–15.5%	–9.9%	–87.3%	–38.4%
J9293, Mitoxantrone HCL, 5 mg	5.9%	0.6%	1.2%	–4.9%	–6.7%	–2.2%	–10.2%	–59.1%
J9185, Fludarabine phosphate, 50 mg	16.6%	3.5%	10.8%	–4.4%	–6.7%	0.2%	–41.3%	–51.8%
J9031, BCG (bacillus calmette and guerin) live, 1 vial IV	4.2%	–1.0%	–1.0%	NA	–22.2%	–20.5%	–2.7%	–50.7%

Hylan G-F (J7320) (Medicaid and public payer prices were not identified for Hylan G-F).

As noted previously, the prices reported by Medicare HMOs were generally quite close to the current Medicare reimbursement rates, with 30 of 35 reported prices being within 10 percent of the current Medicare price. Twelve of the Medicare HMO prices were lower and 23 were higher than the Medicare payment. The prices reported by PBMs were also reasonably close to the Medicare payment rates. Twenty-seven of the 34 reported prices were within 10 percent of the Medicare rate. Twelve PBM prices were lower, 21 were higher, and 1 was the same as the Medicare payment rate.

Wholesalers consistently reported lower prices than Medicare currently pays. All 26 of the reported prices were lower than the Medicare payment rate. Sixteen of the prices were within 10 percent of the Medicare payment rate, while 10 prices represented larger potential savings. The biggest potential savings were 76 percent for ipratropium bromide (J7644), 84 percent for albuterol sulfate (J7619), and 75 percent for leucovorin calcium (JO640).

GPOs also reported prices that were consistently lower than Medicare prices. All 32 of the GPO reported prices were lower than the current Medicare price. Fourteen of the prices were within 10 percent of the Medicare payment rate, while 18 prices represented larger potential savings. The biggest potential savings were 76 percent for ipratropium bromide (J7644), 86 percent for albuterol sulfate (J7619), and 57 percent for leucovorin calcium (J0640).

Mail-order pharmacies offer lower than Medicare prices for 29 of the 34 codes reported. Of the reported prices, 21 were within 10 percent of the Medicare prices (including all 5 higher prices), and 13 prices represented potential savings of more than 10 percent. The biggest potential savings were 82 percent for leucovorin calcium (J0640), 78 percent for granisetron HCL (J1626), and 42 percent for albuterol sulfate (J7619).

All 33 available Medicaid prices were lower than the Medicare prices. Five of the prices were within 10 percent of the Medicare price; the remaining 28 represented larger potential savings. Potential savings were greater than 80 percent for six drugs:

ipratropium bromide (J7644), albuterol sulfate (J7619), infliximab (J1745), immune globulin (J1562), granisetron HCL (J1626), and botulinum toxin (J0585).

All 35 available public payer prices were at least 24 percent less than Medicare payment rates, and half of the prices were at least 50 percent less than Medicare payment rates. Three drugs had potential savings of over 80 percent: albuterol sulfate (J7619), leucovorin calcium (J0640), and doxorubicin HCL (J9000). Imiglucerase (J1785) offered the smallest percentage savings of 24.8 percent.

4.3.2 IMS Data

IMS data exhibited much less variability. None of the included drugs had a coefficient of variation above 0.5. The average maximum price was 67 percent higher than the average minimum, which is about half of the spread calculated from the primary analysis prices. Moreover, with the exception of some of the prices for imiglucerase (J1785), all of the reported prices are lower than the Medicare payment rates.

Federal facilities prices constituted the lowest price for 24 of the 30 drugs in the IMS subset. Long-term care, MORX, and chain stores had 3, 2, and 1 of the lowest prices, respectively (Tables 4-7 and 4-8).

The average quantity-weighted prices ranged from 6 percent less than the Medicare payment rate for filgrastim (GCF) 480 mcg (J1441) to 87 percent less for albuterol sulfate (J7619):

- 0 to 9 percent: 2 drugs
- 10 to 19 percent: 15 drugs
- 20 to 29 percent: 1 drug
- 30 to 39 percent: 2 drugs
- 40 to 49 percent: 5 drugs
- 50 to 59 percent: 2 drugs
- 60 to 69 percent: 1 drug
- 70 to 79 percent: 1 drug
- 80 to 89 percent: 1 drug

Looking at the different price categories, food stores, chain stores, independent pharmacies, home health, and long-term care facilities generally paid higher prices than the quantity-weighted average

Table 4-7. Prices per Drug, IMS Data

HCPCS	Medicare	Food Stores	Chain Stores	Independent	Home Health	Long-Term	Hospitals	MORX IMS	Clinics	HMOs	Federal Facilities	Average
J9217, Leuprolide acetate for depot suspension, 7.5 mg	569.32	519.00	509.05	499.44	501.76	511.88	509.92	483.85	459.33	403.00	321.89	492.79
Q0136, Epoetin alpha, for non ESRD use, 1,000 units	11.66	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J9202, Goserelin acetate implant, 3.6 mg	446.50	379.59	356.84	351.67	370.64	317.98	289.14	250.60	188.72	243.69	143.88	198.62
J7644, Ipratropium bromide, unit dose form, 1 mg	3.34	1.16	1.05	1.13	1.09	1.01	0.99	0.97	0.99	1.15	1.21	1.04
J7619, Albuterol, unit dose form, 1 mg	0.47	0.07	0.06	0.06	0.11	0.08	0.08	0.08	0.08	0.08	0.08	0.06
J9265, Paclitaxel, 30 mg	173.55	149.02	146.14	145.72	145.33	145.68	144.90	149.00	139.71	145.12	105.38	142.16
J2430, Pamindronate disodium, 30 mg	241.09	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J9045, Carboplatin, 50 mg	99.33	90.38	86.22	86.49	85.67	85.78	85.15	87.50	82.87	85.73	50.34	82.90
J9310, Rituximab, 100 mg IU	423.04	368.97	369.72	365.82	360.66	354.40	364.14	356.39	358.45	362.79	234.94	358.13
J9206, Irinotecan, 20 mg	117.60	98.69	100.10	99.88	98.83	98.62	99.81	101.09	98.76	95.99	63.86	98.39
J9170, Docetaxel, 20 mg	274.70	244.53	241.92	240.36	239.91	238.35	239.41	236.64	231.72	236.99	149.16	234.57
J9201, Gemcitabine HCL, 200 mg	89.53	80.36	78.52	79.17	78.53	77.68	78.79	80.30	77.81	77.18	44.99	77.56
J1441, Filgrastim (G-CSF), 480 mcg	266.62	254.12	255.00	245.46	243.53	244.18	255.07	228.72	250.83	244.57	204.56	249.36
J1260, Dolasetron mesylate, injection, 25 mg	38.44	23.95	23.55	24.07	17.56	20.01	16.10	15.99	17.27	14.54	10.47	17.72
J7320, Hylan G-F 20, 16 mg	205.63	176.35	174.83	176.48	173.45	174.42	175.35	173.60	172.30	175.18	167.83	173.06
J0640, Leucovorin calcium, 50 mg	20.41	15.93	13.04	12.96	9.11	8.93	9.05	9.12	10.59	9.80	11.87	12.10
J1745, Infliximab, injection, 10 mg	58.65	50.67	49.33	49.18	49.10	48.74	48.76	47.97	48.43	47.97	34.53	48.51
J2405, Ondansetron HCL, 1 mg	6.07	3.42	3.42	3.44	3.38	3.34	2.88	3.39	2.77	3.03	1.99	3.23
J1561, Immune globulin, 500 mg	44.69	31.92	34.57	28.58	27.94	25.53	26.90	30.29	20.28	34.95	11.97	23.05
J1440, Filgrastim (G-CSF) 300 mcg, 300 mcg	167.16	156.21	140.08	152.90	144.60	153.03	142.87	142.14	134.91	154.00	95.15	140.23
J1562, Immune globulin intravenous, 5 grams	381.37	201.89	212.15	206.78	213.46	198.58	202.86	184.64	171.84	186.74	118.95	191.99

(continued)

Table 4-7. Prices per Drug, IMS Data (continued)

HCPCS	Medicare	Food Stores	Chain Stores	Independent	Home Health	Long-Term	Hospitals	MORX IMS	Clinics	HMOs	Federal Facilities	Average
J7192, Factor VIII anti-hemophilic, recombinant, 1 IU	1.13	NA	1.05	0.82	0.77	0.67	0.73	0.81	0.80	0.98	0.91	0.78
J1626, Granisetron HCL, injection, 100 mcg	18.52	14.56	14.26	13.36	11.77	11.28	10.40	13.05	9.53	13.10	7.70	10.22
J9355, Trastuzumab, 10 mg	49.93	43.43	43.23	42.83	42.54	41.50	42.66	40.88	41.10	41.74	NA	41.64
J9350, Topotecan, 4 mg	580.00	518.63	531.22	518.72	518.91	470.61	520.23	522.36	502.30	481.48	304.27	507.61
J7190, Factor VIII anti-hemophilic, human, 1 IU	0.86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
A9505, Thallous Chloride TL 201, ≤250 mg	41.31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J9000, Doxorubicin HCL, 10 mg	38.00	22.03	22.75	21.87	8.75	8.96	7.50	15.01	12.81	13.02	6.02	9.97
J7517, Mycophenolate mofetil, 250 mg	2.17	2.02	2.00	1.99	1.97	1.99	1.95	1.85	1.85	1.95	1.33	1.94
J2820, Sargramostim (GM-CSF), 50 mcg	27.14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J9390, Vinorelbine tartrate, 10 mg	73.62	63.69	63.25	62.98	56.47	41.33	53.36	63.78	53.28	62.94	37.07	53.29
J1785, Imiglucerase, 1 unit	3.74	NA	3.73	3.77	3.77	NA	3.71	3.19	3.74	NA	2.73	3.39
J0585, Botulinum toxin type A, 1 unit	4.38	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J9293, Mitoxantrone HCL, 5 mg	221.61	196.88	191.17	189.78	188.46	161.95	188.99	189.02	179.74	182.76	91.25	180.43
J9185, Fludarabine phosphate, 50 mg	233.61	210.06	212.20	211.81	205.95	186.35	205.72	207.27	200.71	204.62	107.72	199.71
J9031, BCG (bacillus calmette and guerin) live, 1 vial IV	161.54	124.57	128.25	111.43	102.32	75.23	100.48	115.11	110.22	95.58	81.95	99.48

Table 4-8. Price Percent Difference from Medicare, IMS Data

HCPCS	Food Stores	Chain Stores	Independent	Home Health	Long-Term	Hospitals	MORX IMS	Clinics	HMOs	Federal Facilities	Average
J9217, Leuprolide acetate for depot suspension, 7.5 mg	–8.8%	–10.6%	–12.3%	–11.9%	–10.1%	–10.4%	–15.0%	–19.3%	–29.2%	–43.5%	–13.4%
Q0136, Epoetin alpha, for non ESRD use, 1,000 units	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J9202, Goserelin acetate implant, 3.6 mg	–15.0%	–20.1%	–21.2%	–17.0%	–28.8%	–35.2%	–43.9%	–57.7%	–45.4%	–67.8%	–55.5%
J7644, Ipratropium bromide, unit dose form, 1 mg	–65.4%	–68.7%	–66.3%	–67.5%	–69.9%	–70.5%	–71.1%	–70.4%	–65.6%	–63.8%	–68.9%
J7619, Albuterol, unit dose form, 1 mg	–85.3%	–87.1%	–87.0%	–75.9%	–83.6%	–82.8%	–82.3%	–83.1%	–83.1%	–83.4%	–86.8%
J9265, Paclitaxel, 30 mg	–14.1%	–15.8%	–16.0%	–16.3%	–16.1%	–16.5%	–14.1%	–19.5%	–16.4%	–39.3%	–18.1%
J2430, Pamindronate disodium, 30 mg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J9045, Carboplatin, 50 mg	–9.0%	–13.2%	–12.9%	–13.8%	–13.6%	–14.3%	–11.9%	–16.6%	–13.7%	–49.3%	–16.5%
J9310, Rituximab, 100 mg IU	–12.8%	–12.6%	–13.5%	–14.7%	–16.2%	–13.9%	–15.8%	–15.3%	–14.2%	–44.5%	–15.3%
J9206, Irinotecan, 20 mg	–16.1%	–14.9%	–15.1%	–16.0%	–16.1%	–15.1%	–14.0%	–16.0%	–18.4%	–45.7%	–16.3%
J9170, Docetaxel, 20 mg	–11.0%	–11.9%	–12.5%	–12.7%	–13.2%	–12.8%	–13.9%	–15.6%	–13.7%	–45.7%	–14.6%
J9201, Gemcitabine HCL, 200 mg	–10.2%	–12.3%	–11.6%	–12.3%	–13.2%	–12.0%	–10.3%	–13.1%	–13.8%	–49.8%	–13.4%
J1441, Filgrastim (G-CSF), 480 mcg	–4.7%	–4.4%	–7.9%	–8.7%	–8.4%	–4.3%	–14.2%	–5.9%	–8.3%	–23.3%	–6.5%
J1260, Dolasetron mesylate, injection, 25 mg	–37.7%	–38.7%	–37.4%	–54.3%	–47.9%	–58.1%	–58.4%	–55.1%	–62.2%	–72.8%	–53.9%
J7320, Hylan G-F 20, 16 mg	–14.2%	–15.0%	–14.2%	–15.6%	–15.2%	–14.7%	–15.6%	–16.2%	–14.8%	–18.4%	–15.8%
J0640, Leucovorin calcium, 50 mg	–22.0%	–36.1%	–36.5%	–55.4%	–56.3%	–55.7%	–55.3%	–48.1%	–52.0%	–41.9%	–40.7%
J1745, Infliximab, injection, 10 mg	–13.6%	–15.9%	–16.1%	–16.3%	–16.9%	–16.9%	–18.2%	–17.4%	–18.2%	–41.1%	–17.3%
J2405, Ondansetron HCL, 1 mg	–43.6%	–43.6%	–43.3%	–44.4%	–44.9%	–52.6%	–44.1%	–54.3%	–50.1%	–67.3%	–46.8%
J1561, Immune globulin, 500 mg	–28.6%	–22.7%	–36.0%	–37.5%	–42.9%	–39.8%	–32.2%	–54.6%	–21.8%	–73.2%	–48.4%
J1440, Filgrastim (G-C5F) 300 mcg, 300 mcg	–6.6%	–16.2%	–8.5%	–13.5%	–8.5%	–14.5%	–15.0%	–19.3%	–7.9%	–43.1%	–16.1%
J1562, Immune globulin intravenous, 5 grams	–47.1%	–44.4%	–45.8%	–44.0%	–47.9%	–46.8%	–51.6%	–54.9%	–51.0%	–68.8%	–49.7%
J7192, Factor VIII anti-hemophilic, recombinant, 1 IU	NA	–7.1%	–27.9%	–31.6%	–40.6%	–35.5%	–28.8%	–29.5%	–13.7%	–19.9%	–30.9%

(continued)

Table 4-8. Price Percent Difference from Medicare, IMS Data (continued)

HCPCS	Food Stores	Chain Stores	Independent	Home Health	Long-Term	Hospitals	MORX IMS	Clinics	HMOs	Federal Facilities	Average
J1626, Granisetron HCL, injection, 100 mcg	–21.4%	–23.0%	–27.9%	–36.4%	–39.1%	–43.8%	–29.5%	–48.5%	–29.2%	–58.4%	–44.8%
J9355, Trastuzumab, 10 mg	–13.0%	–13.4%	–14.2%	–14.8%	–16.9%	–14.6%	–18.1%	–17.7%	–16.4%	NA	–16.6%
J9350, Topotecan, 4 mg	–10.6%	–8.4%	–10.6%	–10.5%	–18.9%	–10.3%	–9.9%	–13.4%	–17.0%	–47.5%	–12.5%
J7190, Factor VIII anti-hemophilic, human, 1 IU	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
A9505, Thallous chloride TL 201, ≤250 mg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J9000, Doxorubicin HCL, 10 mg	–42.0%	–40.1%	–42.5%	–77.0%	–76.4%	–80.3%	–60.5%	–66.3%	–65.7%	–84.2%	–73.8%
J7517, Mycophenolate mofetil, 250 mg	–6.9%	–7.8%	–8.6%	–9.3%	–8.5%	–10.1%	–15.0%	–14.9%	–10.1%	–38.9%	–10.8%
J2820, Sargramostim (GM-CSF), 50 mcg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J9390, Vinorelbine tartrate, 10 mg	–13.5%	–14.1%	–14.5%	–23.3%	–43.9%	–27.5%	–13.4%	–27.6%	–14.5%	–49.7%	–27.6%
J1785, Imiglucerase, 1 unit	NA	–0.4%	0.9%	0.7%	NA	–0.9%	–14.8%	0.1%	NA	–27.0%	–9.3%
J0585, Botulinum toxin type A, 1 unit	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
J9293, Mitoxantrone HCL, 5 mg	–11.2%	–13.7%	–14.4%	–15.0%	–26.9%	–14.7%	–14.7%	–18.9%	–17.5%	–58.8%	–18.6%
J9185, Fludarabine phosphate, 50 mg	–10.1%	–9.2%	–9.3%	–11.8%	–20.2%	–11.9%	–11.3%	–14.1%	–12.4%	–53.9%	–14.5%
J9031, BCG (bacillus calmette and guerin) live, 1 vial IV	–22.9%	–20.6%	–31.0%	–36.7%	–53.4%	–37.8%	–28.7%	–31.8%	–40.8%	–49.3%	–38.4%

price. Hospitals, HMOs, and mail order pharmacies tended to pay slightly over the average price, while clinics paid slightly less. Federal facilities paid significantly below quantity-weighted average prices.

4.4 IMPACT OF TYPE OF DRUG

Drugs included in the study can be classified according to their method of delivery to patients, the type of disease they treat, the type of carrier that reimburses for it, as well as whether there are multiple manufacturers of the drug. Three drugs are supplied to patients primarily through pharmacies, and the rest are usually administered by health care providers. Two pharmacy drugs (albuterol and ipratropium bromide) are used in nebulizers and are reimbursed by DME carriers. The other pharmacy supplied drug is mycophenolate mofetil, which is used by organ transplant patients. All of the drugs administered by health care providers are reimbursed by Part B carriers. Of the 33 administered drugs, 23 are primarily dispensed by oncologists, and the remaining 10 drugs have a variety of uses. Analysis of oncology drugs versus the other administered drugs did not reveal any significant differences in pricing characteristics. Of the 36 drugs, 10 exist in competitive markets with multiple producers. Both DME drugs have multiple producers, as did 5 of the 10 nononcology administered drugs. Only 3 of 23 oncology drugs had multiple producers. The remaining drugs have a single producer. To allow comparison across all price sources, descriptive statistics were calculated on the subset of drugs common to both IMS and the primary analysis. This eliminated one multi-source oncology drug, two single-source oncology drugs, two multi-source nononcology administered drugs, and one single-source nononcology administered drug. Among the categories, we found the most variation among the DME and multi-source drugs.

4.4.1 DME Drugs

DME drugs exhibited the highest weighted average CV. Albuterol and ipratropium bromide had a CV of 0.46 and an average spread between the minimum and maximum price of 703 percent. Switching reimbursement to the lowest price for each drug would reduce payments for these DME drugs by 86 percent, from $723.5 million to $104 million.

4.4.2 Multi- and Single-Source Drugs

Drugs with multiple producers exhibit significantly larger price variation than single source drugs. The CV for multi-source drugs is 0.13, versus 0.01 for single source drugs. The spread between the highest and lowest price was 906 percent for multi-source drugs and 271 percent for single-source drugs. Some of the variation described by these measures can in part be attributed to differences in prices among different suppliers of the same drug. Since HCPCS are calculated from multiple NDC prices, and many of the HCPCS prices are computed from the prices of just a few of the included NDC codes, the selection of included NDC prices can skew the HCPCS price calculated. If Medicare reimbursement had been set at the lowest price, multi-source drug reimbursement would have decreased by 82 percent from $922 million to $129 million. The majority of these savings would be from the DME drugs due to their high allowed quantities, but both DME and non-DME multi-source drugs exhibit similar bound disparities and percent reductions from Medicare to the minimum price. Single-source drugs would have yielded a 52 percent reduction from $2,698 million to $1,261 million (Table 4-9).

Table 4-9. Descriptive Statistics by Type of Drug

	Weighted Average CV	Bound Disparity	Medicare Reimbursement	Minimum Reimbursement	Percent Difference	Total Savings
All Drugs	0.0293	419%	$3,619,808,332	$1,389,821,579	–62%	$2,229,986,753
DME Drugs	0.4577	703%	$723,531,427	$103,828,329	–86%	$619,703,098
Non-DME Drugs	0.0088	399%	$2,896,276,905	$1,285,993,250	–57%	$1,610,283,655
Multi-Source Drugs	0.1302	906%	$921,777,754	$128,597,126	–82%	$793,180,628
Single-Source Drugs	0.0094	271%	$2,698,030,579	$1,261,224,454	–52%	$1,436,806,125

4.5 OTHER SOURCES OF PRICING DATA

We sought pricing data from other sources and studies in an attempt to corroborate and supplement the analysis.

4.5.1 Results from Other Studies

Prices from other studies were also collected and compared to the analysis. Prices paid for prescription drugs by the VA as well as "actual wholesale prices" (median prices included in wholesaler catalogs) were identified in an OIG report (DHHS/OIG, 2001a). OIG analyzed 24 drugs, 23 of which are included in the primary analysis portion of this report. The one drug not included in this analysis is acetylcysteine, which is a relatively low billing DME drug for which none of the questionnaire respondents provided a price. These 23 drugs represented approximately $4 billion in Medicare reimbursement in 2000, which is larger than the $3.6 billion represented by the 30 drugs in the IMS subset because IMS does not include some of the higher billing drugs. Comparison of the 23 drugs common to both OIG and our analysis indicates that OIG estimates of Medicare reimbursement would have yielded a 0.6 percent decrease in total reimbursement payments over those predicted by the current Medicare estimates in our analysis. OIG's estimated "actual wholesale prices" would have reduced reimbursement by 25 percent. These prices are lower than the prices provided by wholesalers in questionnaires, which would result in a 23 percent reduction in reimbursement. The simulated reimbursement using OEI's VA prices would have lowered reimbursement by 52 percent from $4 billion to $1.92 billion (Table 4-10 and Figure 4-4).

Another source of information that we compared to our own study was the GAO's report *Payments for Covered Outpatient Drugs Exceed Providers' Cost,* which contained 2001 estimates of AWPs measures of discounts below these AWPs available in the prescription drug market. We first compared our estimates of AWP to those reported by GAO. The average GAO AWP was 2.86 percent higher than ours, and the total Medicare allowed charges for these AWPs would have been 2.64 percent higher than the level predicted by our AWPs. Since the GAO AWPs are listed for 2001, 1 year later than our analysis, this increase seems reasonable (Table 4-11).

Table 4-10. Simulated Reimbursement with OIG Data

Price Source	Total Reimbursement	Difference from Medicare ($)	Difference from Medicare (%)
Medicare HMO	$3,999,968,815	–$6,886,752	–0.2%
OIG Med	$3,982,018,733	–$24,836,834	–0.6%
Medicare	$4,006,855,567	—	—
PBMs	$3,926,568,321	–$80,287,246	–2.0%
MORX	$3,539,097,784	–$467,757,783	–11.7%
Wholesalers	$3,096,186,421	–$910,669,146	–22.7%
OIG Catalog	$3,005,043,695	–$1,001,811,872	–25.0%
GPOs	$2,991,351,789	–$1,015,503,779	–25.3%
Medicaid	$2,560,271,891	–$1,446,583,676	–36.1%
OIG VA	$1,916,632,044	–$2,090,223,523	–52.2%
Public Payers	$1,719,556,468	–$2,287,299,099	–57.1%

Figure 4-4. Simulated Reimbursement with OIG Prices

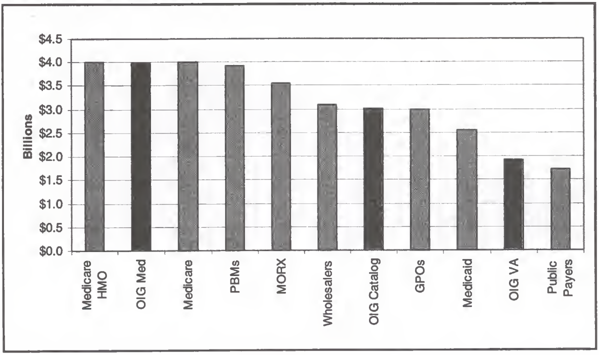


Table 4-11. Corroboration of AWPs

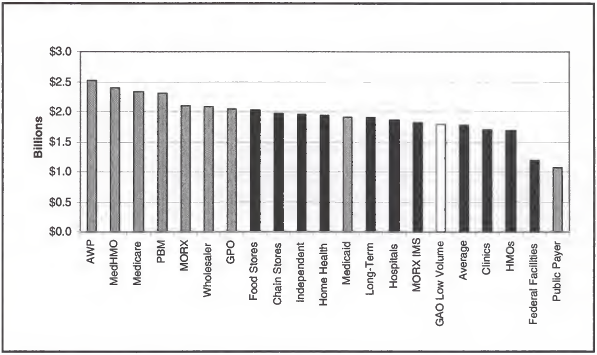
HCPCS	2000 AWP Current Study	2001 AWP GAO	Percent Difference
J9217, Leuprolide acetate, depot suspension, 7.5 mg	594.65	618.93	4.08%
Q0136, Epoetin alpha, for non ESRD use, 1,000 units	12.47	12.91	3.56%
J9202, Goserelin acetate implant, 3.6 mg	469.99	469.99	0.00%
J7644, Ipratropium bromide, unit dose form, 1 mg	3.52	3.52	–0.14%
J7619, Albuterol, unit dose form, 1 mg	0.49	0.50	1.19%
J9265, Paclitaxel, 30 mg	182.63	180.57	–1.13%
J2430, Pamindronate disodium, 30 mg	266.54	279.86	5.00%
J9045, Carboplatin, 50 mg	109.30	120.48	10.23%
J9310, Rituximab, 100 mg IU	464.53	478.47	3.00%
J9206, Irinotecan, 20 mg	132.08	141.32	7.00%
J9170, Docetaxel, 20 mg	313.51	313.51	0.00%
J9201, Gemcitabine HCL, 200 mg	107.50	112.34	4.50%
J1441, Filgrastim (G-CSF), 480 mcg	300.40	300.40	0.00%
J1260, Dolasetron mesylate, injection, 25 mg	41.63	45.02	8.16%
J7320, Hylan G-F 20, 16 mg	215.65	225.13	4.40%
J0640, Leucovorin calcium, 50 mg	18.96	18.44	–2.76%
J2405, Ondansetron HCL, 1 mg	6.41	6.41	0.00%
J1440, Filgrastim (G-CSF) 300 mcg, 300 mcg	182.86	193.62	5.88%
J1626, Granisetron HCL, injection, 100 mcg	19.52	19.52	0.00%
J7517, Mycophenolate mofetil, 250 mg	2.41	2.53	4.94%
J1785, Imiglucerase, 1 unit	3.95	3.95	0.00%
J0585, Botulinum toxin type A, 1 unit	4.63	4.86	5.08%

The GAO also reported prices available to oncologists who billed low volumes to Medicare as well as prices widely available from catalogs. GAO reported these data as percent discounts from GAO's 2001 AWPs (GAO, 2001a). We calculated prices from these measures based on the assumptions that the same discounts were available the previous year and that the net increase in GAO's AWPs over ours is due to price increases from 2000 to 2001 (Table 4-12 and Figures 4-5 and 4-6).

Table 4-12. GAO Prices

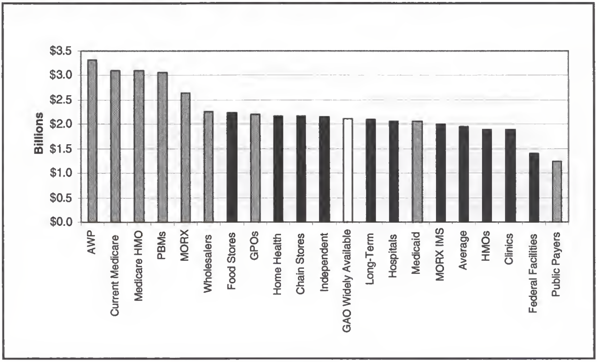
HCPCS	2000 AWP Current Study	GAO Low-Volume Billers		GAO Widely Available	
		Percent Discount from GAO AWP	Predicted Prices	Percent Discount from GAO AWP	Predicted Prices
J9217, Leuprolide acetate, depot suspension, 7.5 mg	594.65	–32.8%	399.60	–17.6%	489.99
Q0136, Epoetin alpha, for non ESRD use, 1,000 units	12.47	–22.1%	9.71	–15.2%	10.57
J9202, Goserelin acetate implant, 3.6 mg	469.99	–22.3%	365.18	–21.9%	367.06
J7644, Ipratropium bromide, unit dose form, 1 mg	3.52			–78.0%	0.78
J7619, Albuterol, unit dose form, 1 mg	0.49			–85.0%	0.07
J9265, Paclitaxel, 30 mg	182.63	–25.8%	135.51	–19.0%	147.93
J9045, Carboplatin, 50 mg	109.30	–20.0%	87.44	–20.3%	87.11
J9310, Rituximab, 100 mg IU	464.53	–15.7%	391.60	–19.2%	375.34
J9206, Irinotecan, 20 mg	132.08	–27.1%	96.28	–22.9%	101.83
J9170, Docetaxel, 20 mg	313.51	–22.0%	244.54	–22.0%	244.54
J9201, Gemcitabine HCL, 200 mg	107.50	–16.1%	90.19	–21.3%	84.60
J1441, Filgrastim (G-CSF), 480 mcg	300.40	–22.4%	233.11	–18.0%	246.33
J1260, Dolasetron mesylate, injection, 25 mg	41.63	–62.0%	15.82	–65.0%	14.57
J0640, Leucovorin Calcium, 50 mg	18.96	–90.4%	1.82	–85.6%	2.73
J2405, Ondansetron HCL, 1 mg	6.41	–26.4%	4.72	–12.8%	5.59
J1626, Granisetron HCL, injection, 100 mcg	19.52	–28.1%	14.03	–29.3%	13.80
J7517, Mycophenolate mofetil, 250 mg	2.41			–14.2%	2.07

Figure 4-5. Reimbursement with GAO 2001 Low-Volume Discount



Note: Excludes Epotin Q0136, to allow inclusion of IMS categories.

Figure 4-6. Reimbursement with GAO 2001 Widely Available Discount



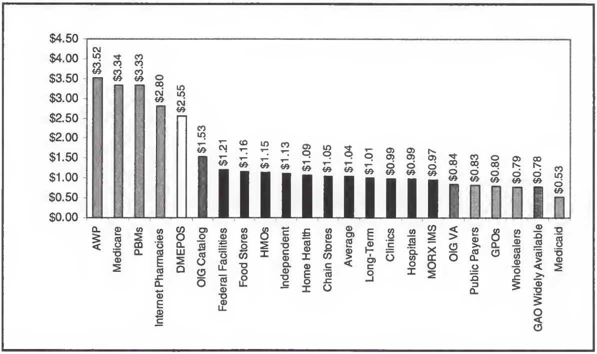
Note: Excludes Epotin Q0136, to allow inclusion of IMS categories.

4.5.2 DMEPOS Competitive Bidding Demonstration

Price data were available from the DMEPOS Competitive Bidding Demonstration, currently ongoing in Polk County, Florida, and San Antonio, Texas. This demonstration required suppliers of DME and prosthetics, orthotics, and supplies (POS) to submit bids for products and services included in the demonstration. The San Antonio demonstration required bidding for nebulizer drugs, including albuterol and ipratropium bromide, which are included in this study. Pricing data from this demonstration represent costs at the final distribution level for drugs supplied by retail pharmacies or home delivery services.

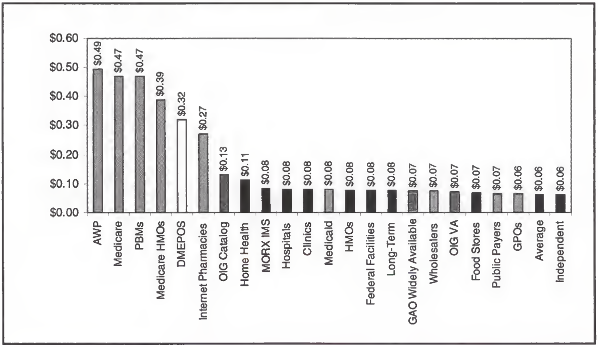
The maximum allowed charges set for these drugs in the demonstration were compared to the prices in our study. The allowed charge for ipratropium bromide was $2.55, which is 22 percent lower than the current Medicare reimbursement. For albuterol, the demonstration allowed charge was $0.32, which is 32 percent lower than Medicare reimbursement. These prices are much higher than the prices captured at the manufacturer and wholesaler level, including all IMS data, Medicaid, public payers, and OIG VA and OIG catalog prices (Figures 4-7 and 4-8). Simulated reimbursement of these two drugs using the DMEPOS allowed charge would be twice as high as reimbursement based on prices available to wholesale customers, and nearly three times higher than reimbursement set at federal purchaser prices, but would be nearly identical to reimbursement using Internet pharmacy prices. It is possible that some or all of this difference in price is attributable to costs incurred from distribution, and thus the DMEPOS allowed charge may be an accurate final distribution price.

Figure 4-7. DMEPOS Demonstration Reimbursement for Ipratropium Bromide



Note: Prices for Ipratropium Bromide (J7644).

Figure 4-8. DMEPOS Demonstration Reimbursement for Albuterol



Note: Prices for Albuterol (J7619).

5 Summary and Discussion

In this section, we summarize the key results from our study and discuss their implications for Part B drug reimbursement policy. The following are key results of our study:

- Organizations that buy or sell drugs covered by Medicare Part B are likely to be unwilling to provide price information voluntarily.
- IMS offers a relatively convenient data source.
- Medicare pays significantly more for drugs covered by Part B than other payers.
- The VA and other federal payers enjoy the lowest prices.
- We were able to obtain prices at various points in the drug distribution chain.

These results are discussed in Section 5.1. In Section 5.2, we describe the results' implications for reimbursement policy.

5.1 SUMMARY OF RESULTS

5.1.1 Organizations That Buy or Sell Drugs Covered by Medicare Part B are Likely to be Unwilling to Provide Price Information Voluntarily

Despite intensive efforts, we had great difficulty in obtaining accurate price and rebate information directly from wholesalers, PBMs, GPOs, and Medicare managed care organizations. We ultimately received data from only 3 wholesalers, 2 PBMs, 2 GPOs, and 2 Medicare HMOs. Because of this low response rate, the resulting price information should be interpreted with extreme caution; we believe that the data from other sources are more reliable. Our low response rate is not an isolated experience. The

GAO report *Payments for Covered Outpatient Drugs Exceed Providers' Cost* also attempted to solicit prices from wholesalers and GPOs, but none of the organizations provided data.

As described in Section 4.1, the methodology for our questionnaire effort involved establishing a point of contact within an organization and then requesting that they complete a questionnaire listing drug prices. Overall, a point of contact was established in 58.5 percent of 241 identified companies. However, only 22 percent of these contacts agreed to participate, and among these, only 29 percent eventually completed the questionnaire. The most commonly cited reason for not responding to our questionnaire was that the price or rebate information requested was proprietary and confidential. Many potential respondents stated that they needed permission from upper management or their legal departments in order to respond. In no instance did an organization participate after the request was forwarded from the initial point-of-contact. Several individuals contacted during the questionnaire effort expressed skepticism and suspicion as to the motives and results of our analysis. In many markets, businesses are reluctant to provide confidential price information to noncustomers. However, the suspicious reactions of many of the organizations we contacted, such as consultations with attorneys and legal departments, have led us to speculate that this normal reluctance may have been heightened in the pharmaceutical market by recent government lawsuits and investigations, some of which were instigated by whistle-blowers. Since 1996, the Department of Justice has recovered about $3 billion from the health care industry through criminal fines, restitution, and civil recoveries, and the level of investigators and prosecutors devoted to this area has been rapidly increasing (Holder and Posner, 2001). It is not uncommon for response rates to voluntary questionnaires, especially those requesting sensitive information such as prices, to be low. Even so, we feel that the prospective participants in this effort have been unusually resistant and our response rates lower than we have obtained in similar questionnaire efforts.

While our finding of low response rates can rightfully be viewed as a negative result, it also offers an important lesson for Part B drug reimbursement policy: any pricing policy that tries to rely on manufacturers, wholesalers, or other organizations to provide data to Medicare will probably require mandatory reporting of price data.

5.1.2 IMS Offers a Relatively Convenient Data Source

We found the IMS data to be a relatively good source of information on prices. The data are based on invoice prices paid by a variety of drug distribution outlets to drug manufacturers and retailers. These outlets uniformly paid prices lower than Medicare reimbursement, although the percentage discounts varied across outlets. The IMS data are easy to use and provide information at the NDC level.

The IMS data do have limitations. The invoice data do not include bottom-line rebates and charge-backs, so that the IMS prices probably overstate the net prices paid by the different outlets. This actually makes the fact that the IMS prices were lower than the Medicare reimbursement rates all the more impressive, because the full effects of the rebates and charge-backs were not included. A potential limitation of using IMS data in determining Medicare pricing is that wholesalers and other organizations may be less willing to cooperate with IMS if they believe that the information they provide may be used to lower Medicare reimbursement. Despite these limitations, we believe that the IMS data are an important resource that CMS could use to determine whether current Medicare Part B payments are too high.

5.1.3 Medicare Pays Significantly More for Drugs Covered by Part B than Providers, Pharmacies, and Other Payers Pay

Our simulations indicate that Medicare pays significantly more for drugs covered by Part B than providers, pharmacies, and other payers. At the aggregate level, the only two exceptions to this result were one of the PBMs and the two Medicare HMOs who responded to our questionnaire, and these organization appeared to follow Medicare reimbursement policy in setting their prices. Based on our simulations for the group of drugs with IMS data, Medicare allowed charges would be

- 11 percent lower if Medicare could obtain the prices offered by internet pharmacies,
- 21 percent lower if Medicare could obtain the prices charged by the wholesalers who responded to our questionnaire,

- 24 percent lower if Medicare could obtain the prices charged by GPOs,
- 35 percent lower if Medicare could obtain the prices paid by Medicaid (before rebates),
- 36 percent lower if Medicare could obtain the prices paid by outlets included in the IMS data, and
- 53 to 55 percent lower if Medicare could obtain the prices paid by federal facilities such as the VA.

Our results are consistent with previous research showing that Medicare pays more than other payers. A very important caveat of these comparisons is that they are not necessarily comparing identical goods. Medicare reimburses pharmacies and health care providers at the final distribution level. Drugs at this point include costs that have accrued from selling, transportation, storage, and preparation. Some health care providers also claim that they are using the over-reimbursement of drugs to compensate for insufficient physician practice expense payments. Medicare reimbursement must also reimburse for these expenses, which are not accounted for by, for example FSS prices, since the federal purchasers using these programs are responsible for the costs of distribution and administration of the drugs. Setting Medicare reimbursement to a level below that which could be obtained by final distributors might impair beneficiary access.

5.1.4 The VA and Other Federal Payers Enjoy the Lowest Prices

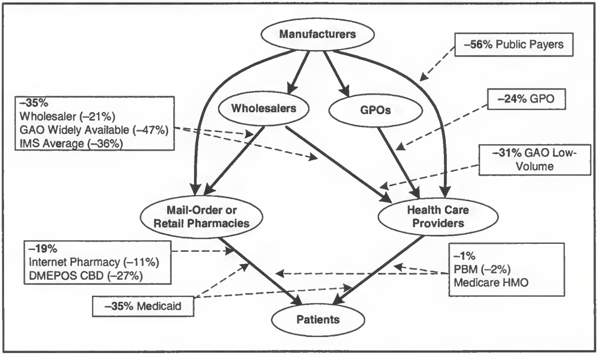
As the preceding results show, we found that federal facilities and public payers such as the VA obtain the lowest prices. Again, this result is consistent with previous research. Comparing Medicare reimbursement rates to the FFS used by the VA therefore produces the largest estimates of potential savings from changing Medicare pricing. However, in evaluating reform alternatives, it may be more realistic to focus on the less extreme price differences obtained by other payers.

5.1.5 We Were Able to Obtain Prices at Various Points in the Drug Distribution Chain

As we noted in Section 2, drug prices are likely to differ at different points along the drug distribution chain. Our results indicate some correlation between prices and the corresponding distribution level.

Figure 5-1 is a simplified version of Figure 2-2, showing only the most important distribution pathways and the associated prices. For example, the box in the upper left-hand corner shows the average price difference (35 percent) between the Medicare reimbursement rate and the prices charged to pharmacies and health care providers by wholesalers who responded to our questionnaire, the wholesalers who provided widely available prices in the GAO study, and the IMS average prices to pharmacies and health care providers. The diagram simplifies somewhat the correlation between prices and distribution level, because some of our price data cut across more than one distribution channel. For example, the IMS data include prices paid by outlets either to manufacturers or wholesalers; however, IMS states that 98 percent of purchases by retailers in their survey were from wholesalers.

Figure 5-1. Price Discounts below Medicare at Points on Primary Distribution Pathways



Prices exhibited some correlation with the distribution level they represented. Prices early in the distribution channels, such as manufacturer or wholesaler prices, tended to be lower than prices at final distribution levels, such as Internet pharmacy prices and the DMEPOS Competitive Bidding Demonstration allowed charges (the

PBM and Medicare HMO prices were even higher, but, as previously described, these responses are based on organizations that appear to be following Medicare reimbursement policy of paying 95 percent AWP). The lowest prices seen were those available to public purchasers, such as the VA and other agencies purchasing through the FSS or national contracts. Data representing purchases from wholesalers and Medicaid prices were higher, but these data do not include rebates or charge-backs that occur after initial sale.

Data for the two pharmacy-supplied nebulizer drugs that are included in the DMEPOS Competitive Bidding Demonstration tell an especially interesting story. Both drugs are multi-source, and wholesalers charge prices that are up to 85 percent lower than the Medicare reimbursement rate. The demonstration allowed prices represent prices that retail pharmacies are willing to accept from Medicare patients. These prices are still considerably lower than the Medicare reimbursement rate, but they are not nearly as low as the wholesale price. Assuming that the demonstration brought about fairly competitive pricing for the nebulizer drugs, the difference between the retail and wholesale prices suggest that there may be substantial costs of providing drugs at the pharmacies that have to be recovered in the retail price. These costs could include pharmacy labor, overhead, and storage costs, among others.

Even if the conclusion that there are substantial costs of providing drugs through retail pharmacies is correct, the conclusion may not be relevant for setting appropriate prices for the other drugs covered by Part B. Most of the other drugs are dispensed by health care providers, not by pharmacies. Although health care providers may also incur costs for storage, labor, and administering drugs, there is an important difference. Physicians and other providers receive direct payment for administering chemotherapy and other drugs through a series of HCPCS codes. Analysis of BESS revealed that Medicare allowed charges for administration of oncology drugs alone was $182.6 million in 2000, about 6 percent of allowed charges for oncology drugs. In addition, physicians also receive indirect payments for storage and nonphysician labor costs, because the physician payment system includes payments for nonphysician practice expenses. In principal, these payments should cover the costs of storage, labor, and administering the drugs. The GAO report, *Medicare Physician Fee Schedule, Practice Expense Payments to Oncologists Indicate Need for Overall Refinements* (GAO, 2001b), concluded that minor refinements to the current system would yield sufficient payments. Thus, if physicians are receiving sufficient practice expense reimbursement and distribution mark-up is negligible, wholesale prices may represent a useful target for reimbursement policy for nonpharmacy drugs.

5.2 IMPLICATIONS FOR PART B DRUG REIMBURSEMENT POLICY

In recent testimony before a House subcommittee, DHHS Deputy Inspector General George Grob (Grob, 2001) listed nine policy options for reforming the current Medicare Part B prescription drug payment policy of 95 percent AWP. These options provide a useful framework for discussing the implications of our results for Part B drug reimbursement policy. Below, we discuss each of these options in the context of the data we collected. Choosing between these options is beyond the scope of our project; rather, our objective is to explain how the data we collected could be used to implement each of the options. It is also worth emphasizing that many of these options require either redefining the AWP used in the current legislatively mandated reimbursement formula or new legislation.

- **Authorize a commission to set payment rates.** Grob envisioned a commission similar to MEDPAC, which recommends rate increases for Medicare hospital and physician payments. The commission would recommend periodic updates to prices. The data we collected and analyzed would certainly be useful information for a commission; if anything, these data appear to support an overall reduction in payments. However, it is not clear whether such a commission would focus only on aggregate price updates (as MEDPAC does) or on setting prices for individual drugs. Our data suggest that a single drug price update factor might not be appropriate, because the percentage differences between the average IMS price and current Medicare payment rates vary widely between HCPCS.
- **Calculate national estimated acquisition costs based on the average manufacturer prices (AMP) reported to the Medicaid program.** Grob estimated that CMS would have saved 38 percent ($1.4 billion out of the $3.7 billion spent in 2000) if Medicare reimbursement of 24 drugs had been based on the AMP. Because the AMPs collected as part of

the Medicaid rebate system are confidential, we did not have access to AMP data. However, the IMS average price, which is based on wholesaler invoice prices, represents a probable upper bound on the AMP. It is an upper bound because it is (a) based on invoice prices for sales from wholesalers to pharmacies and suppliers, unlike the AMP which is based on sales from manufacturers to wholesalers, and (b) the IMS average price does not include discounts and rebates. Using the IMS average price instead of current reimbursement rates, we estimate that CMS would have saved 35 percent. This estimate is reasonably close to Grob's estimate. However, use of IMS data in a Medicare reimbursement formula may limit the ability of IMS to collect data.

- **Collect more accurate AWPs from drug pricing catalogs or other sources.** Our lack of success in collecting price information from wholesalers highlights the importance of Grob's recommendation that manufacturers and wholesalers be required to provide their price catalogs to CMS. In the absence of such a requirement, we believe that few wholesalers would provide the price catalogs. Even if wholesalers are required to provide price catalogs, the catalog prices will not provide information on rebates and discounts.
- **Increase the discounting of the published AWP.** The IMS data suggest that drugs are purchased at most channels at prices substantially below the 95 percent of the AWP CMS currently pays. In the aggregate, this supports an increase in the percentage discount from the published AWP. However, there are at least two important reasons why this approach may not be optimal. First, our price data do not support a single discount percentage from the AWP for all procedures. Comparing the percentage difference between the IMS data for any given distribution channel and the AWP, there is a wide variation across procedures. For example, the percentage difference between the average IMS price and the AWP ranges from 16 percent for J1785 to 694 percent for J7619. A common discount rate below the AWP could lead to some drugs being reimbursed below their IMS average prices and others being reimbursed above their average prices. Second, as Grob notes, manufacturers would have an added incentive to increase the AWP to make up for the larger discount. For existing drugs, this incentive could be checked by limiting increases in the AWP to increases in inflation, as is done with Medicaid acquisition reimbursement (perhaps with exceptions made when a manufacturer could provide evidence of large cost increases). For new drugs, however, manufacturers could set introductory AWPs higher to offset the larger discount.
- **Base payment on physician/supplier acquisition costs.** Either the IMS average or clinic prices could be used as a source of data on physician/supplier acquisition costs.

Although the IMS data are invoice prices that do not contain complete information on discounts and rebates, the prices are still substantially below current payment levels. If prices are based on average IMS data, individual clinics and physicians will still have an incentive to search for the lowest price they can receive (Grob was concerned that physicians and suppliers would not search for the best price if their reimbursement was directly tied to their costs). If CMS felt the need to pay more than the acquisition cost, reimbursement could be based on the acquisition cost plus some percentage.

- **Establish manufacturers' rebates similar to those used in the Medicaid program.** Grob envisioned a Medicare rebate system similar to the most-favored customer approach currently employed by Medicaid, where the rebate is a percentage of the AMP or the difference between the AMP and the best price paid by any nonfederal payer. CMS currently has most of the data it needs to implement such a system using the data it collects for the Medicaid rebate program. Once NDCs are required on Medicare pharmacy claims beginning on October 16, 2003, CMS may be able to adopt more generic manufacturer rebate plans for these transactions, where the rebates are not necessarily tied to the AMP or the best price. Under a more generic rebate plan, the rebates may be based on volume, total payments, or specific prices. Having the ability to collect manufacturer rebates would give CMS an instrument for reducing reimbursement that is commonly used by other payers. However, proposed changes to the HIPAA regulations would require NDCs only on pharmacy claims. If NDCs were not required for Part B drugs administered by physicians or clinics, CMS's ability to collect manufacturer rebates would be limited.
- **Create a fee schedule for covered drugs based on the Federal Supply Schedule negotiated by the Department of Veterans Affairs.** The data we collected support the conclusion that FSS and other public payer prices are substantially below the prices currently paid by Medicare Part B. Our results suggest that Medicare would pay about 55 percent less if it could pay the same price as public payers. However, there are two limitations to this comparison. The first is whether the FSS could continue to negotiate prices to the same level if these prices also applied to Medicare beneficiaries. When the Medicaid rebate program was passed, policy makers became concerned that if the FSS prices were included in the calculation of the best price, the Department of Veterans Affairs would not be able to negotiate as favorable prices. Because of this concern, the FSS prices were ultimately excluded from the best price calculation used for determining Medicaid manufacturer rebates. The second concern is that pharmacies and health care providers may not be able to obtain drugs at FSS prices, and this could impact beneficiary access.

- **Use CMS's inherent reasonableness authority.** The IMS data would provide useful information for determining the inherent reasonableness of current Part B prices. Arguably, the IMS information could be used to support a finding that current prices are too high. Our data could be used as one of the bases for setting the new prices. Although CMS was granted inherent reasonableness authority, Congress has since placed restrictions on its use, such as requiring the GAO to release studies prior to its use.
- **Use competitive bidding.** Results from Medicare's DME Competitive Bidding Demonstration suggest that competitive bidding can reduce Medicare Part B prices. The competitive bidding prices for albuterol (J9619) and ipatropium bromide (J7644) are 31.9 percent and 23.7 percent lower than the corresponding regular fee schedule prices, respectively. It should be noted, however, that these price reductions are not as large as the difference between the IMS average prices and the regular fee schedule prices (87 percent and 69 percent, respectively), nor as large as the difference between the public payer prices and the regular fee schedule prices (86 percent and 75 percent, respectively). In addition, the inhalation drugs covered in the competitive bidding demonstration differ from most of the other drugs currently covered by Medicare Part B in two potentially important ways. Inhalation drugs have multiple sources and are usually purchased from a pharmacy. In contrast, most of the other drugs have a single source and are usually provided in physician offices.

In evaluating how to use the price information to set reimbursement policy, it is useful to distinguish between two different ways to use the information. First, the information could be used to *adjust* current prices for individual drugs. Second, the information could be used to construct a new reimbursement *formula* that would be used systematically to set reimbursement rates for all covered drugs in the future. The two uses are not mutually exclusive (CMS could use the data to adjust current prices and set a new reimbursement formula), but they do have different advantages and disadvantages. Using price information to adjust current prices for individual drugs has the advantage that currently available, relatively unbiased information is used to make the adjustment. For example, knowing that the actual wholesale price of an oncology drug is 50 percent less than the current Medicare reimbursement rate provides strong evidence that the rate currently calculated as 95 percent of the AWP is too high. A one-time price adjustment could be made relatively easily. The disadvantage of the one-time adjustment is that it does not say how to set prices for the drug in the future or how to set prices for drugs newly covered by Medicare.

In contrast, establishing a new reimbursement formula provides a straightforward method for setting prices in the future for both current and new drugs. But there is an important complication: changing the formula is likely to change manufacturer or wholesaler drug pricing strategies, and these changes could lead to changes in the very variables that are included in the formula. For example, if the current pricing formula was to be changed so that the reimbursement equals 80 percent of the AWP instead of 95 percent, drug manufacturers would have incentives to increase their AWPs above current levels. Similarly, if Medicare were to adopt a most favored customer clause, so that Medicare received the best price offered to other payers, drug manufacturers would have less incentive to offer good prices to the other payers, knowing that offering a low minimum price would trigger large reductions in Medicare revenue. As a result of the change in formula, past information on best prices to other payers would offer relatively little information on the best price that would be obtainable under the new formula as manufacturers react strategically to maintain profits. As a third example, basing reimbursement on IMS invoice prices might hinder IMS's ability to collect the invoice data. It may be best to use previously collected data, such as IMS data, as a benchmark for guiding and assessing the formulation of a new reimbursement policy.

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